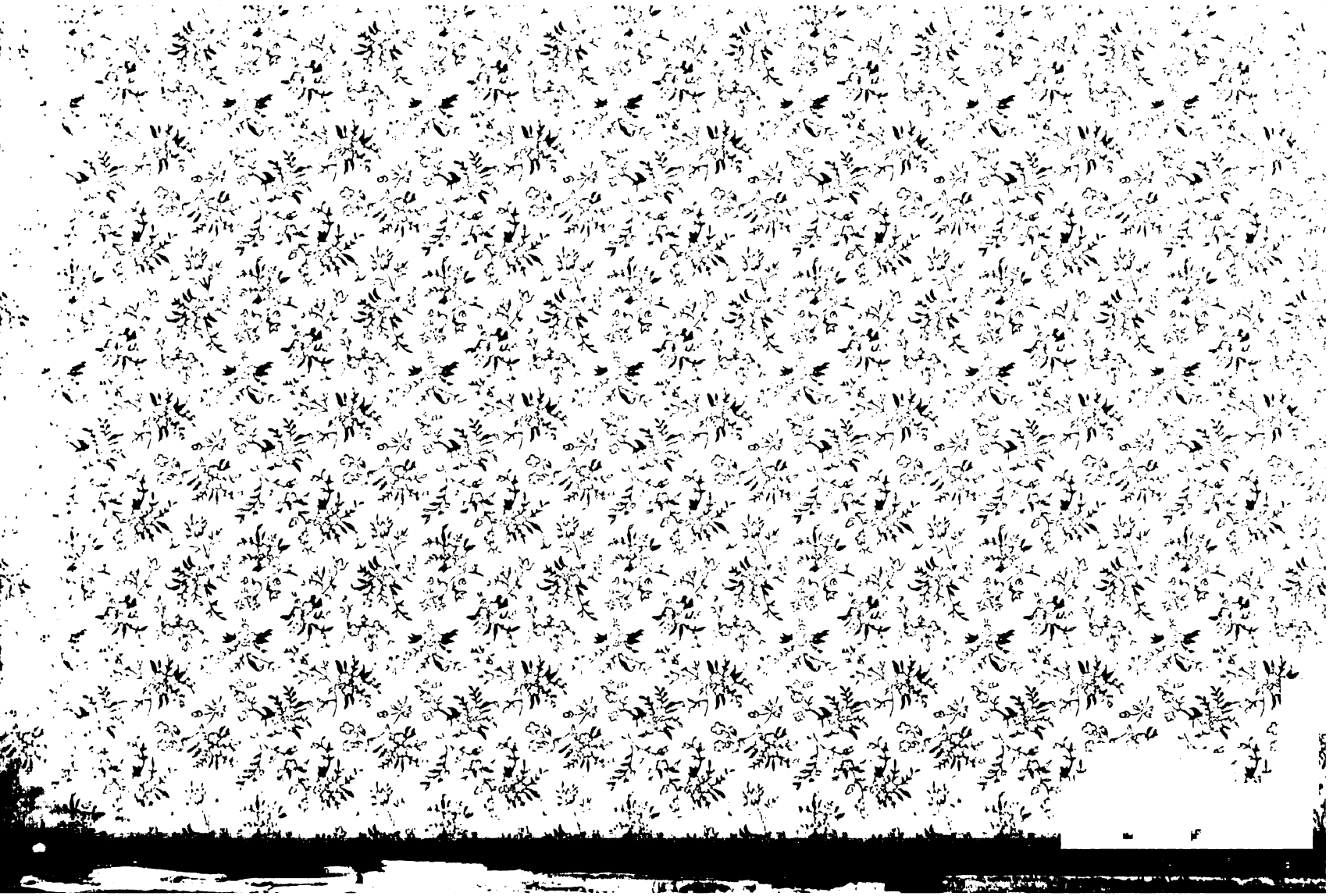


INDUSTRIAL TRAINING CLASS.

Industrial-Social Education

By

WILLIAM A. BALDWIN,

Principal of the State Normal School, Hyannis, Massachusetts.

Assisted by

Mrs. Baldwin and Members of the Faculty.

I wish the youth to be an armed and complete man; no helpless angel to be slapped in the face, but a man dipped in the Styx of human experience, and made invulnerable so, — self-helping. A redeeming trait of the Sophists, Hippias and Gorgias, is that they made their own clothes and shoes. Learn to harness a horse, to row a boat, to camp down in the woods, to cook your supper. — *Emerson.*

SPRINGFIELD,
MILTON BRADLEY COMPANY,
1903.

B

To My Father,

WHO, THOUGH A PHYSICIAN, PURCHASED LAND AS
HIS BOYS GREW OLD ENOUGH TO WORK,
AND TAUGHT THEM FARMING.

PREFACE.

Whatever the man does, or whatever befalls him, opens another chamber in his soul,—that is, he has got a new feeling, a new thought, a new organ. Do we not see how amazingly for this end man is fitted to the world? — *Emerson.*

This book on industrial-social education has been written in response to the suggestion of several persons whose opinions on educational matters are highly esteemed in Massachusetts. It has been said that a brief account of the inauguration of the work which is being done along this line at Hyannis, supplemented by a discussion of the pedagogical reasons for the work and a few chapters showing exactly how some things have been done, would be certain to prove helpful to many teachers. It has also been urged that there is a very widespread and increasing interest in the subject among all people who are interested in educational and social improvement, and that those who are anxious to introduce industrial work into their schools find very few helpful books on the market. These are some of the reasons which have led me to offer this, which may be considered as a preliminary report of work as yet in the experimental stage.

Even these reasons would not have seemed to furnish a sufficient excuse for adding to the multitude of new books if I had not become gradually but thoroughly convinced regarding the following points: that we are working along right lines, even if our work is crude; that our faces are toward the light; that the work is very important and that our most thoughtful people of all classes are ready for something of this kind.

Modern education has for its basis a few pedagogical principles upon which all educators now agree. It should be noted, however, that the general agreement occurs when the principles are stated, but that when it comes to the application of these same principles there is almost as general disagreement.

As one consciously attempts to apply just a few of these principles according to his understanding of them, he soon becomes convinced that they are much more complex and far-reaching than he had supposed. He continually gets new glimpses of old truth, and it comes gradually to mean something quite different from what it did before. It has gradually been borne in upon me that what we need in education is not so much the discovery of new truth as the application of the truth in which we all claim to believe.

The present duty of every teacher is to try to understand that which is accepted as truth in modern pedagogy and to work out the application which is

appropriate for his own particular field. Then we may compare notes and move forward.

All of the work at Hyannis has been planned with this thought in mind. This book is an attempt to explain to any who may be interested in educational development what we are attempting to do by way of the application of the principles of Pestalozzi and Froebel. The book, like the work, is fragmentary and lacking in artistic finish.

That which has thus far been accomplished has been possible only through the earnest co-operation of the members of the faculty and the kind consideration of Supt. F. W. Kingman, the members of the local school committee, and of the parents of the children of the Training School.

Particular mention should be made of those teachers who have described so clearly the various kinds of hand work which is done under their direction, of Mrs. Baldwin for the chapter on the knot-stitch baskets and for great assistance in proof reading, and of Mr. Henry Turner Bailey for writing the introduction, for designing the cover and for many valuable suggestions.

Chapters VI and VII were written by IDA E. FINLEY.
Chapters VIII, IX, XII and XIII, by MABEL M. KIMBALL.
Chapter X, by ISADORE M. JONES.
Chapters XIV, XV, and XVIII, by BERTHA M. BROWN.
Chapter XVI, by CLARA M. WHEELER.
Chapter XIX, by ANNIE H. CHADWICK.

In the hope that it may be a means of help and encouragement to all those who are striving to bring more abundant life into our schools, this book is sent forth to the public.

INTRODUCTION.

To realize the visions of all the seers of the race, to make for the Highest a perpetual dwelling place with men, has ever been the effort of the leaders of mankind. Since Plato men have thought of the Highest as the True, the Beautiful, and the Good, and of these three as one. But alas! within their thought the three have not been held in equilibrium. The primal balance has never yet been attained by man. The Hebrew emphasized the Good, and untempered by science and art it became the righteousness of the scribes and pharisees—an exclusive and competitive piety whose logical end is to be seen in the dispersion of the nation. The Greek emphasized the Beautiful, and untempered by wise laws and efficient ethical ideals it became the sensuous, and the nation disappeared, for the things that are seen are temporal. The Roman emphasized the True as he conceived it under the form of law, but law enforced regardless of life and love brought forth hatred and death, and Rome decayed. Every nation, every free city, every organization of men, every man, consciously or subconsciously, has attempted this supreme emprise. The watchwords have changed but the quest has been one: law, love, life; loyalty, bravery, purity; alchemy, romance, chivalry; equality, liberty, fraternity; knowledge, culture, morality; science, art, religion;—called by any name in any tongue the desire of all nations is the same, Immanuel, God with us. For the attainment of this ideal men have sought to find an efficient agent in a divine-human hero, a divine-human king, a divine-human law, a divine-human institution, a divine-human book. America, in searching for an efficient agent, has hit upon Education—free, universal education for every human being within her borders. In that education in early days the religious element was over-emphasized; in later days the intellectual was too strongly urged; in our day teachers are coming to see that the sensuous must have its place, for ever, as of old, the three are one. The education of the head, of the hand, and of the heart, in perfect balance, that is the modern guise of this world-old problem. Upon this problem Mr. Baldwin and his associates at Hyannis have been at work. I have had the good fortune to know something of the hopes and fears, of the ideals and efforts, of this group of earnest teachers from the very beginning of their work. I am familiar with the results thus far secured. I therefore take pleasure in bearing testimony to the fact that this little book happily reflects their thought, their

spirit and their practice. Whatever faults it may share with all things human, it has one merit of transcendent worth. It is sincere. It goes forth fearlessly to proclaim the abiding faith of its author, that the proper training of head, hand and heart in true accord will ultimately make possible to all men a life of health and joy and peace.

HENRY TURNER BAILEY.

Trustworth, North Scituate, Massachusetts, Spring, 1903.

TABLE OF CONTENTS.

Chapter.		Page.
I.	Industrial work at Hyannis Normal School.	15
II.	The attitude of the child in the new manual training.	29
III.	Manual training adapted to the environment of the child and related to the work of the home and society.	35
IV.	Manual training and physical training as a basis for other school work.	45
V.	The playhouse as a center in the primary grades.	55
VI.	Weaving in the first and second grades.	57
VII.	Raphia work for the first and second grades.	65
VIII.	Raphia baskets.	71
IX.	Rattan and splint baskets.	77
X.	Melon baskets.	83
XI.	Knot-stitch baskets.	87
XII.	Braided raphia hats.	93
XIII.	Rattan footstools.	97
XIV.	First year of school garden work.	105
XV.	Second year of school garden work.	113
XVI.	Correlation of school garden with other subjects.	119
XVII.	Advantages of school gardens and suggestions regarding the management of the same.	125
XVIII.	Hammock making.	129
XIX.	Sewing.	137
XX.	Vacation schools.	141

TRAINING SCHOOL. NORMAL SCHOOL. DORMITORY.

SCHOOL GROUNDS, HYANNIS, MASS.

CHAPTER I.

INDUSTRIAL WORK AT THE HYANNIS NORMAL SCHOOL.

This apparatus of wants and faculties, this craving body, whose organs ask all the elements and all the functions of Nature for their satisfaction, educate the wondrous creature which they satisfy with light, with heat, with water, with wood, with bread, with wool. The necessities imposed by this most irratable and all-related texture have taught man hunting, pasturage, agriculture, commerce, weaving, joining, masonry, geometry, astronomy. Here is a world pierced and belted with natural laws, and fenced and planted with civil partitions and properties, which all put new restraints on the young inhabitant. He, too, must come into this magic circle of relations, and know health and sickness, the fear of injury, the desire of external good, the charm of riches, the charm of power. The household is a school of power. There, within the door, learn the tragi-comedy of human life. Here is the sincere thing, the wondrous composition for which day and night go round.—*Emerson.*

Attempts are being made in various places to solve the problem of modern education. The Hyannis Normal School is attacking the problem from its industrial and social sides. The reader may be interested in an imaginary visit of inspection.

The village school consists of over two hundred children of the nine grades and is used as the training department of the Hyannis State Normal School. If your visit were to be made at three o'clock in the afternoon, you would see a school very much like the ordinary village school, housed in a modern brick building of six rooms and doing the usual schoolroom work. At five minutes after three you would see a transformation. The school becomes a manufactory in which each child is making something. In the first-year room one group of children, working in pairs, is engaged in weaving woolen rugs for the dolls' house; some are braiding, and others are sewing their braided raphia into mats. In the second-year room a group of the children are making furniture of tag-board, while the other division of the class has gone to work in the garden. In the third-year room the third-grade children are making raphia baskets, while the fourth-grade children are out working in their garden.

School changed into a manufactory.

Of the children of the grammar grades, some boys have gone to the attic to make rattan baskets; one group of girls is at the dormitory sewing on the machine; the eighth-grade boys and girls are at work in their garden, and one class has taken an expedition into the fields to study the birds.

The children talk quietly together as they work. They go and help themselves to material as it is needed, and help each other when it seems desirable. (Often a child proves to be a more helpful instructor than the teacher.) They are allowed the utmost liberty as long as they work and encourage others to work. It is worth going far to see the new spirit which shines in their faces and the new attitude which has been developed toward nearly all of the school work. This is evident throughout the day and in all grades.

New spirit.

Having had a glimpse of the school as it is now, the reader may like to know how this transformation came about. The Hyannis Normal School was organized in 1897. The training school came under the direct supervision of the normal school in 1898. We first attempted to put the work on a basis similar to that of the more progressive public schools of the state. Some kindergarten occupations were introduced in the primary grades. Considerable attention was given to physical training during school hours and at recess time. Children went out on expeditions for nature-study during school hours, and some regulation manual-training work was introduced.

History of movement.

But gradually we became convinced that we were working only on the edge and very largely from without. We seemed to be changing the outer form without much change of the inner spirit. In the spring of 1901 we gave the children, who should have taken wood-work and sewing, garden work. A section of the campus, about one hundred and eighty by fifty feet, was fertilized, plowed, and harrowed, and the seed was purchased by the state. Then this land was turned over to the teachers and pupils. Meanwhile the members of the class had gained some valuable letter-writing experience in sending carefully written letters to seedsmen. They had reviewed their knowledge of mensuration by measuring and measuring again the garden, and plotting off the same into different sections for the planting of the various kinds of seeds. Many discussions arose regarding the best time and place for the planting of the different kinds of seeds. These furnished splendid opportunities for connecting the home and the school, for the use of reference-books, and for good, live language work, both oral and written.

Regular manual training work replaced by garden work.

As soon as the weather was suitable, the children began to prepare the ground for planting, and on pleasant days they worked in the garden about an hour each afternoon. They became very observant of weather conditions. The different kinds of seeds were planted in their seasons, some, like lettuce and sweet corn, being planted at different times. Records were kept, in books provided for the purpose, of the time of planting, the time of coming up, and the various changes in the growing plants. Plants were compared as to their rela-

Preparing the ground.

INDUSTRIAL WORK OF FOURTH GRADE.

tive rate and manner of growth, and the ideas gained from these plants were used as a basis for reading of the growth of similar plants in other parts of the world. The first radishes were sold to the dormitory, and for these the class received its first check. This, with other checks and cash received from the sale of garden produce during the summer and fall, amounting to over thirty dollars, was deposited in the Hyannis National Bank. The whole class went to the bank and learned exactly how to make a deposit and to draw out money. Each pupil was provided with a blank book into which he copied bills of produce sold, deposits made, and checks drawn.

Correlation with regular studies.

After the fall term began, the same class, now the eighth grade, again assumed the care of the garden. The children picked and sold tomatoes, sweet corn, squash, and cucumbers, pulled beets and turnips, and saved corn, beans, and other seeds for next year's planting. They also studied forms of fruit and seeds, and the relation of plants to some animal life, like the larvæ on the turnips and tomatoes, and the parasites on the tomato larvæ.

Garden work in the autumn.

After finishing the garden work, the class elected a president and secretary, and discussed what it should do with the money. A committee was appointed to consider the matter and make recommendations. After several days of consideration the committee reported, advising the expenditure of not more than five dollars for a little class party to which each member might invite a friend, the purchase of some cord for hammocks, and the acceptance of my offer to teach them how to make hammocks which might be sold and the proceeds of which might be added to the bank deposits. The report was accepted with enthusiasm. The pupils gained some good points in parliamentary practice in connection with class meetings. They learned how to write notes of invitation for their party and gained some valuable hints on entertaining. Before they could make their hammocks, each was obliged to whittle out his own block and needle. This required considerable care and perseverance, but the hammock-making lured them on and they persisted. Their interest has steadily increased as they have grown in the sense of their own power to do something that has a commercial value. This garden work, and that with which it had been correlated, had proved so interesting and so valuable that we seemed to have a good basis on which to build.

Organization of class.

Social party.

Hammock-making.

As the work of the autumn opened up, it seemed to me that the time was propitious for a forward step of considerable importance. Several of the regular weekly faculty meetings, in which the teachers of both the normal and training schools take an active part, were taken up with the reading and discussion of Dr. Hailmann's address before the graduates of the teachers' classes in

Discussions in faculty meetings.

manual training in the Public School of Industrial Art, Philadelphia, June, 1894, as it appears in *New Methods in Education;* some portions of Professor Dewey's *The School and Society;* some passages from Pestalozzi's *Leonard and Gertrude* and from Froebel's *Education of Man;* and a paper which I had written on manual training. Then I said to the teachers something like this: "You are good, strong teachers, and the work is sure to go pretty well if I say nothing, but we have been working together now long enough to be acquainted, and I believe we have the confidence of the community, and I think we are ready to put things on a different basis, to change the whole attitude of our school. When you think of a school, of what do you think? Rows of desks with children in them, prisoners in their cells, not held by iron bars, but by the will of the teacher. When you think of the work, how much of it originates with the pupil? Go through the work of any regular school day, and figure out the per cent. of work which is imposed upon the children from without and the per cent. which grows out of the conscious personal needs of the child. Is the child's standpoint receiving its due attention?

Child standpoint.

"As a teacher and as a superintendent of schools I have been much interested in the introduction of nature work of the right kind into the schools, and have seen the wonderful joy and inspiration which such work has brought into many schools where teachers and pupils have gone out together into the fields and have brought the spirit of the fields into the schoolroom.

Inspiration from nature work, manual training, and the kindergarten.

"Very early, too, I began to appreciate the value of having children make their own apparatus in school. I saw in the kindergarten and manual-training schools how the children love to be doing things. Gradually, but surely, I have come to my present belief that much of the education in our schools is not practical because it is unnatural and artificial. We take the young child away from the fields and woods, where he longs to be, and put him into a box, which some of us have been trying to adorn and make into a gilded cage. Even here we are unwilling that he shall move about and exercise his young and growing muscles, but he must be trained to sit quietly in one place and in one position for the best hours of the day.

Education not practical.

"When you think of the child as you see him at home, in the field, or on the street, full of life, of activity, which is a part of his very life, and of joy, which is the natural accompaniment of the activities of the live American boy, and then think of him as you see him in the average school, you cannot but be impressed with the contrast. Out of school he was a veritable interrogation mark; in school the tables are turned and he must answer instead of ask questions. Out of school, from morning until night, he was the personification of

Boy out of and in school.

perpetual motion. In school, if he obeys the rules of the school, he must sit quietly in his place. Now, modern psychology teaches, what every common-sensed father knows, that activity is a necessity for the life and growth of the young child physically, mentally, and morally; that the young child is continually reaching out through his special senses to lay hold upon everything about him, to test it, to know about it, to see what its relation to himself may be, to see if he can use it and make something for himself with it; that he is an imitative being, delighting to say the sounds he hears, to represent the action which he sees and hears described, and, in fact, to live over, and so make his own, the different experiences of the people whom he sees, and of whom he reads.

Activity of child.

"Now I desire to have every teacher of the training school do something which will help to change the spirit in the school. I shall not dictate as to what you shall do, but only suggest that you do something. I shall be glad to advise as to the particulars, but what I am most anxious about now is that you, in your own way, put in some kind of manual training which you can do and which will appeal to the children. Watch your children and *feel your way along.*"

Change of spirit desirable.

And so we started in a quite haphazard way, but with a desire to learn. For several years some of us had kept more or less in touch with this kind of work throughout the country, and one of our teachers had studied with Colonel Parker. I now spent a week in New York and Brooklyn hunting for forms of manual training in which the child's standpoint was most considered. One of our teachers was sent to New York to take lessons in basketry and weaving. A little later I went before the local school committee and showed the things which we were doing and explained the theories which we were trying to work out. I asked the committee to lengthen out the school hours about forty-five minutes, so that we might have that time each day for industrial work without being open to the charge of crowding out the three R's. The superintendent of schools and the local school board gave their hearty approval, and we moved forward enthusiastically.

Preparation of teachers.

Approval of local board.

We gradually introduced into the primary grades of the school, weaving, braiding and sewing mats, making baskets and hats, tag-board furniture, wall paper, picture frames, portières—all to be used in furnishing a doll's house; and into the grammar grades, basket-making with raphia and reeds, mounting of sea mosses, making of raphia hats, sewing, darning, cardboard construction, hammock-making, wood-working and bed-making.

Kind of work in primary grades.

In March we gave a school exhibit in which the regular work, as correlated with the newer industrial work, was shown. A part of this exhibit was also

devoted to things made by the children in their homes without assistance from the schools. The purpose of the exhibit was mainly to increase the interest and enthusiasm of the people by helping them to understand what the school was trying to do and so to lead them to be glad to co-operate with the teachers. The result was all that could be desired, and we have felt that we could continue to move forward, sure of the sympathy of the parents.

School exhibit.

Gradually the work has been modified and broadened. The effort has been made to find the work which would best meet the needs of the children of Hyannis and, at the same time, prove suggestive as to the kind of work which might be done in the other public schools of the state.

Adapting work to Hyannis children.

The reader will readily see that whatever has thus far been accomplished has been possible because we have worked together, each striving to do his part. At first one teacher taught gardening, another weaving, and our special teacher in music offered his services as a teacher of printing. Gradually, however, each teacher learns how to teach those things which are considered best for her room. When vacations come, each teacher tries to learn some new industry which may seem desirable for introduction. Several have learned book-binding, others cane-seating, others how to make rattan footstools. These arts are not, however, imposed upon the children from without, but are given in response to some apparent need or desire on the part of the school. For instance, the little children go out into the fields to study nature, then make their own stories for language and reading. It seemed desirable that these stories be printed and bound into simple booklets for the children to keep. We therefore bought a small printing outfit, and some of the teachers took lessons in book-binding; and now the upper grade boys are learning how to print and bind books for the little folks.

Teachers working together.

We have a theory that the home is the natural place in which to educate young children. Young animals are educated at home. Among uncivilized peoples the children are educated in the home. As the demand for trade and business relations appeared, there came a need for instruction in the three R's. The boys were taken out of the life of the home and the fields, and put into a box with an instructor as drill master, and forthwith this became the typical school. As other subjects were gradually added to the curriculum, the type was followed, and the history and geography of our childhood were drilled into us without any connection with life. And so, when some wise people saw the value of sloyd, as the children of the peasants used it to help their parents earn a living, it was accepted as a new subject in American schools, but, in most cases, it followed the afore-mentioned type, was imposed upon the child from without,

Home natural place for education.

TAMARACK IN BLOOM.

BORDERS OF SPIRÆA.

THE WILLOWS.

SPIRÆA IN BLOOM.

for the sake of drilling him in observation, motor adjustment, accuracy, will-power, etc., and did not, in any way, grow out of the life of the child.

Manual training, as we conceive of it, is not an isolated subject demanding admission to an already overcrowded curriculum. It is the appropriate basis for all true education of the child. It recognizes the fact that to educate is to help a child to grow in a natural, harmonious way, from one stage of his development into the next. That to grow the child must be active, and that the best growth will come only when the activity of the child results from his own inner needs. In other words, it is the recognition of the natural demand of the normal child that he be doing something. Manual training has always recognized this, and the best manual training has also appreciated the fact that *the something* should be interesting. Some kinds of manual training have gone a step farther and have said that it must have a personal interest; but very few have urged, as we do, that the activity must grow out of the very life of the child; must come as an expression of the inner being of the child. An illustration may be seen in real life when a country boy is given a hen and some eggs, with the understanding that he may have half of the profits if he will care for the hen and the young chicks. The boy becomes at once very anxious about the food and nest for the hen. He sets to work to make a coop, besieging his father and mother and the hired man for suggestions and assistance. He takes lessons of the neighboring carpenter. He does not learn first how to saw to a line, nor does he take lessons in driving nails, but he makes a coop that will answer his purpose.

Manual training a basis for education.

Kinds of manual training.

Activity to grow out of child's life.

In much the same manner, when children were told that if each would make two hammocks he might have one for his own, every one became anxious to whittle out the tools and to learn how to make the hammocks. And when each girl of the sewing class was given an opportunity to select that which she desired to make for herself or for some member of her family, one girl desired to make an apron for her grandmother, one a handkerchief for her mother, another a hand-bag for herself. Every girl became very anxious to learn to sew well enough to have the article well made.

Under this arrangement the children become the anxious ones, asking for assistance and suggestions which the teacher stands ready to give. This is the reverse of the attitude of the ordinary school where machine-like methods are pursued.

Change in the attitude of the children.

At this stage the visitor usually asks for a printed outline or course of study. We have none. We are afraid of them. Our work is very crude and new, but it is full of virility. We are continually modifying our outlines to fit the varying needs of our children, as these needs are revealed to us. We believe that

No fixed outline.

no outline should be exactly duplicated in two different places nor in two different years. Such duplication leads to formal teaching and spiritual death. We prefer to keep the flexibility and adaptability of life, even if the external results are crude and unfinished. Perhaps it ought to be said here that we do not strive for the accuracy of the machine, nor even of the adult, but for the best work of which each child is now capable. If he does not do his best work, then we strive to change his attitude, as we feel sure that this is at fault. We are anxious to build up the child from within.

Child built up from within.

We would not have you think that our work has no basis in principles, for we are striving to be guided in all our school work by the fundamental principles of child-development. We have taken as our motto, "A live child in a live school"; learning to live by living each day in the school.

In planning work which will best develop the child, we try to study those conditions which have been best for child-development in the past, and they seem to be found in the ideal home. Our model is, therefore, the complete home, full of children, where the father and mother and the older brothers and sisters are helping to make life more beautiful and wholesome for the younger members of the household and for each other. Every school problem is illumined, if not wholly solved, by considering what would be done under like circumstances in such a home. The nature of the child must be considered—not that of the wild, untutored child of Rousseau nor yet of the self-willed child of some modern homes, but of the child as he is in an ideal home, subordinating his will to that of the father or mother and learning to co-operate for the good of the whole family.

Home a model for school.

The first and fundamental lesson of child life is that of subordination to his superiors, the adaptation to environment, both physical and social; the second is that of gaining thought from environment; the third is that of the expression of his own individuality in terms of physical activity; and the fourth is that of co-operation or the voluntary expression or repression of self for the public weal. The industrial work should, therefore, give opportunity for impression, expression and repression. It should give opportunity for both the imitative and creative sides of child nature. We would make industrial work the center of all school life, just as physical activity is the center of all child life out of school. We would have all other school work grow out of and be correlated with this. The child should gradually grow into an appreciation of the need of the other forms of school work to help him in this.

Lessons of child life.

Purpose of industrial education.

The teacher helps the child to answer the many and varied questions that arise in connection with his industrial work, and he comes to understand,

through his own experience, and the questions arising out of his own experience, all that he is able to understand of life in other parts of the world, present, past, and future. He thus comes to be master of himself and of his environment. He will hold the keys of his own destiny in his own hands and become conscious of his power for good in the world. He will come to understand the past through the present and the future through the past and present.

Personal experience of child the basis of education.

We are trying to base the work of the school upon the life out of school, and to help the child to base his life out of school upon his life in school. This makes our problem a social one, reaching out to the whole community. The school becomes the center of the life of the community, just as the development of the child is the principal business of the ideal home. And just as the proper development of the child in the home is often the salvation of the home, so the proper development of the children of the community will become the salvation of the community, and the school will become the center of the new democracy.

School the center of life of the community.

THIRD GRADE CLASS WEEDING.

CHAPTER II.

THE ATTITUDE OF THE CHILD IN THE NEW MANUAL TRAINING.

The natural method forever confutes our experiments, and we must still come back to it. The whole theory of the school is on the nurse's or mother's knee. The child is as hot to learn as the mother is to impart. There is mutual delight. The joy of our childhood in hearing beautiful stories from some skillful aunt who loves to tell them, must be repeated in youth. The boy wishes to learn to skate, to coast, to catch a fish in the brook, to hit a mark with a snowball or a stone; and a boy a little older is just as well pleased to teach him these sciences. — *Emerson.*

It would be hard to estimate how much we owe to the kindergarten and manual training movements for the new spirit which they have helped to bring into our schools. But even these subjects, so full of life and inspiration, are in danger of becoming so systematized in the process of fitting into our highly organized graded school systems as to lose much of their power for good. Many people feel that our schools are having their very life systematized out of them

and that manual training must be used to help in bringing about a more natural condition in our schools. It is in line with these thoughts that I desire to offer several propositions for the consideration of those who are interested in manual training, which ought to mean all who are interested in education.

PROPOSITIONS.

1. The attitude of the child should be carefully considered.
2. The kind of work should be adapted to the environment of the child and connect the school life with that of the home and the community.
3. Manual training and physical training should furnish the center or basis for the school and home life of the child.

It is not possible to discuss one of these propositions without touching on the others. An attempt will, however, be made to make some suggestions regarding the first of these propositions in the present chapter and to discuss the others at a later time.

Incentives in manual training.

During the past year I have asked many teachers this question: "Is it fair to say that every article that is made in connection with manual training shall be made in response to the individual need of the child who makes it?" Some have said at once, "Certainly that ought to be true." Others have hesitated and said, "It sounds all right, but you can't do it." One wise, clear-headed editor told the story of a Yankee, who, being out of work, was engaged to pound a log with the back of his ax at two dollars per day. The story runs about as follows:—

A day laborer of American parentage could find no work and his family were in need. Finally a well-to-do but philosophically inclined farmer said to him, "I have no regular work for you but I will give you two dollars a day if you will do the work which I give you to do." The man was much pleased at the prospect and reported the good news to his wife. The next morning he set out with his ax over his shoulder. The farmer conducted him to the woods and requested him to mount a large log and to go through the motions of chopping but to use the back of his ax. "Oh ho!" said the man, "that's easy enough," and he set to work right merrily. The farmer left him. In about an hour the farmer returned and asked him how he was getting along. "First rate," said the man. The farmer again went away but returned in another hour and again asked how the laborer was getting along. "Fairly well," said the man. The farmer came again an hour later and asked the same question. "Not very well," said the man. "I feel very tired. Is n't it almost noon?" "Oh, no," said the farmer, "it is only ten o'clock." The farmer noted with interest the look of dejection and discouragement on the face of the laborer when

he heard this. When he came again at eleven o'clock the man was nowhere to be seen. He hurried to the home of the laborer and there he found the man in the midst of his hungry and weeping family. When pressed for an explanation he would only say, " I just could n't stand it to chop wood and not see any chips fly."

" This," said our editor, " is a fair sample of much of the manual training work in our schools. It is entirely purposeless from the child standpoint." Purposeless manual training.

The most of the manual training teachers fought shy of my question. One of the most thoughtful ones said, " It is all right for an ideal but I would not dare to follow it out in practice." " Why?" said I. " Oh, I had a little experience along that line a short time ago." And then he told me the following story: A boy who was not particularly bright and who had recently been indulging in truancy, desired to make a desk for himself. This was away beyond his power to do but because of the circumstances the boy was allowed to try it. " Well," I said, " how about the results?" " Oh, he made the desk but you ought to have seen it. If I should exhibit such products from our manual training school our best supporters of manual training would drop away. It was simply impossible." " But what about the boy?" " Oh, he liked it. He never had worked so hard and there was no more trouble about his running away from school." " Did he do his best work?" " Yes, and he continually improved in his work." " Then from the standpoint of a fine desk the result was a failure, but from the standpoint of the boy it was a great success." " Yes." And our schools are for the purpose of developing boys and not for the manufacture of desks. Ideal versus practical.

This teacher is one of the most intelligent and fearless teachers of the subject in New England, and he is doing excellent work. He recognizes, however, the fact that he is working largely from the standpoint of the model rather than from that of the boy. He often encourages the boy who is ahead of the class to make something for himself. But this is only incidental. The main work of all pupils must be the making of certain models which are in the required course in every first-class manual training school where the same system of manual training is taught, in every part of the world. This devotion to a system is bound to lead to formalism and to those mechanical methods which are the bane of all school work. Such methods make for divorcement from practical life, lack of interest, and stagnation. A trade school is much more truly educational than manual training in the regular school on this basis. Just a few years ago the leading educators of this country were taking great pains to discriminate between the *educational* and the *bread and butter* aspects of manual training. They Domination of a system.

failed to see that manual training divorced from the practical aspect loses some of its most valuable educational points. This reminds one of the mistake which is often made when it is said that the early settlers of America were so busy getting a living that they had no time for an education. It seems to be forgotten that the best part of the education of such men as Franklin, Webster and Lincoln was obtained in connection with getting a living. Our most thoughtful manual training teachers are coming to see that manual training as well as other subjects should be in touch with the practical everyday life of the child throughout the course. The child should himself be able to see some reason for doing the thing which he is required to do. This does not mean that there is to be no system to the work, but it does mean that the child shall be above the system. It means that not exactly the same system shall be used in city and country, in every city nor even in every part of the same city. It means that a system which is found good in Sweden is not necessarily good in America; that because a system is good in the high school grades is not a sufficient reason for cutting it down to fit the lower grades.

The following story has recently been told to illustrate the different attitudes of the same people toward the same things under different conditions:—

During the Civil War some Confederate prisoners who had never been accustomed to manual labor were set to moving stones from one part of their prison to another and back again. They knew that the exercise was good for them, but long before night they were exhausted. Noting this, the jailer, who was a thoughtful man, set the same men to work with the same stones. This time, however, they were to use the stones in the construction of a wall in a cellar, which was to be used for confining them more securely at night. The men at once showed a different spirit. They became interested in their work and could soon work day after day without serious fatigue. Shortly after this it occurred to some of these men that there was a possibility of escape. After working hard all day they spent a good portion of every night in tunneling through the same wall and an earth bank beyond, taking out and replacing the same stones twice every night for two weeks until an opportune time came for their escape. The attitude of those prisoners under three different kinds of conditions may, I think, fairly represent the different attitudes of the children toward three different kinds of manual training. No. 1 is the child learning to saw to a line, to drive nails, to make stitches, for the sake of the physical, mental, and moral development. It is well illustrated in the Russian system and is found to some extent in most of the regular systems of manual training. No. 2 is the child working with other children under the direction of the teacher to construct a machine

Different attitudes.

to be used by the class or a building for the use of the school. It is best illustrated in the erection of new buildings at such schools as Tuskegee or Thompson's Farm School in Boston Harbor, and a little of it is done in our best manual training courses. No. 3 is the child making for himself something which he has himself planned with such tools as he is able to secure. It is best illustrated by the country boy stealing away and making for himself a sled or a flying machine with contraband tools and material. It is incompatible with any system of manual training and hence is seldom found in connection with any school work.

It is evident at a glance that no one of these is ideal. It is also evident, I think, that Nos. 2 and 3 contain elements of strength not found in No. 1, and not found in the regular courses in manual training as they appear in our school systems.

It is evident that the difference is not a difference of material, tools nor children. It is a difference of *attitude*.

The new manual training must take cognizance of this, incorporate into itself the strong points of Nos. 2 and 3, and avoid the weakness of No. 1.

A LESSON ON WEEDS.

CHAPTER III.

MANUAL TRAINING ADAPTED TO THE ENVIRONMENT OF THE CHILD AND RELATED TO THE WORK OF THE HOME AND SOCIETY.

The work of the child's hands must express the living interests of the child. — *Felix Adler.*

I believe that our own experience instructs us that the secret of education lies in respecting the pupil. It is not for you to choose what he shall know, what he shall do. It is chosen and foreordained, and he only holds the key to his own secret. By your tampering and thwarting, and too much governing, he may be hindered from his end, and kept out of his own. Respect the child. Wait and see the new product of nature. Nature loves analogies, but not repetitions. Respect the child. Be not too much his parent. Trespass not on his solitude. — *Emerson.*

In a previous chapter an attempt was made to show the importance of considering the attitude of the child in all manual training work. The present chapter will deal with proposition No. 2, viz.: The kind of work should be

adapted to the environment of the child and related to the work of the home and the community. This would seem to be self-evident and hence to need no discussion, were it not so commonly disregarded in much of our regular manual training work.

Effect of manual training in the home.

In visiting schools during the past year, where some of the best manual training work is being done, I have often asked such questions as the following: What effect does this work have upon the home life of the children? Do these girls use the knowledge gained here in cooking and sewing at home? Is there any attempt to connect this work with the needs of the home? Are the needs of the school recognized in planning this work? The usual reply has been, "I don't know; we might ask the children." When the children have been asked it is usually found that some of them have done something at home as a result of the manual training in school and, in rare cases, very much has been done. But in the great majority of cases the home results have been lamentably small and rarely ever has the work in school been given in response to a home demand. In fact, the kind of manual training given has usually, from the child's standpoint at least, no connection with any practical need of the home or the school.

Reasons for any one kind of manual training.

If asked why this kind of work is given, the reply of the more thoughtful manual training teacher is that this form of manual training has proved valuable for educating the child through doing. He may go on to say that modern education teaches that manual training is training the mind through the hand, and that real knowledge and will power can only be gained through self-activity. He may add that this is the natural way and you must *follow nature*. All of which is very good, but let us consider the matter for a little.

Meaning of "Follow Nature."

"Follow nature" has been a shibboleth for educational reformers since the time of Comenius. About two hundred years after Comenius, Rousseau took up the cry, "Follow nature," and after him Pestalozzi and Froebel preached from the same text, but each meant something a little different by his preachment.

Comenius seems to have meant that it is natural for the young child to gain knowledge from the things about him, and that the teacher should allow the child to develop in accordance with the laws of nature just as the gardener trains the vine. Rousseau preached "return to nature." He would let the child alone and "give nature a chance." He went further than Comenius in recognizing the wonderful development which comes to the child through reacting upon his environment.

Activity of child a basis for education.

Pestalozzi studied Rousseau and accepted his theory of child development but had a clearer understanding of the principle. He saw that all real knowl-

edge has its basis in sense perception and can be obtained only through the activity of the child.

Froebel studied Rousseau, Pestalozzi and the *young child at play.* He agreed with Pestalozzi that the young child must be developed through his own sense perception, but he went further in the emphasis of the self-activity of the child. He saw that the child, "a divine idea," develops from within quite as much as from without. The child is to be treated as a *doer* and even as a *creator.* This gives a sufficient reason for manual training and a demand for manual training as a basis for education.

The child a "doer and creator."

Thus far, however, the nature of the child has been considered with reference to its development through contact with the physical world and its growth in power to control physical things and use them in building up its own personality.

The child in relation to his physical environment.

Child nature in its relation to society has received little attention. Adult nature has been almost entirely left out of the question. We have said that the parent should consider the nature of the child, but we have not so strongly emphasized the fact that the natures of the father and mother and brothers and sisters are elements in the problem.

The child in relation to society.

I believe the time is ripe for a broader interpretation of the call, "Follow nature." Education has to do not alone with the individual child but with society. We cannot lift one part very far without elevating the whole. It seems to me that the fact needs to be emphasized that all about the child is an atmosphere, a world of people, against which he reacts and which is as important in its effects upon him as anything in the physical world.

Broader interpretation of "Follow nature."

Here is something that must be reckoned with by the schools. If we would build up the child we must build up the society in which he is immersed. We shall do well if we will study a little more how Nature (God) deals with human nature, developing grand, noble men in the most lowly places and amidst the most unpromising surroundings. "Shall any good thing come out of Nazareth?" might well have been said of many of our noblest men and women. We do well to study into the conditions, other than those of the schools, which make for strength of character. This, it seems to me, is a part of the nature of the child which has been sadly neglected by us teachers. We have been too well satisfied to deal with the children as they come to us into the school and to feel that our duty was done, so far as the children were concerned, when they were well off the school grounds at night.

The child in his social environment.

We do well to consider the nature of each individual child and how it may best be developed physically, mentally and morally; how it acts and reacts upon

its environment; but we must not forget that the environment is not only physical but social, that we have to consider not only the nature of the child but the nature of his father and mother and of other members of his social environment. Not the individual child but the family is the social unit. It is in the home that our best men have learned their best lessons. In the home, then, we must look for suggestions as to the natural way to develop the child.

Must consider child and his home.

A careful study of the conditions for growth in the old New England home will, I think, be found full of suggestions and inspiration as to the right kind of manual training. The old New England farm furnished some of the best manual training that has ever been given.

The New England home was a busy place. Early in the morning the household was astir. In summer the farmer arose at 4 o'clock, called the hired man to feed the horses and milk the cows; John and George must help about the milking, drive the cows and get wood and water for their mother before the regular day's work began. Mary must set the table and help to cook and serve the breakfast. After breakfast John and George must go to the field with the men while Mary washed dishes, made beds and prepared the vegetables for dinner. Long before noon all were tired and hungry and glad of the brief respite and grateful refreshment of the noon hour. The afternoon was passed like the morning in wholesome labor, varied somewhat in character from that of the morning, but filling every hour.

Suggestions from typical New England home.

After supper the cows must again be milked and the horses rubbed down and fed for the night. Indoors the dishes must be washed, the bread set to rise and some mending needed attention. During the short evening a neighbor or two might drop in to exchange news, but very early all members of the household retired to restful sleep.

With the changing season came corresponding changes in the work; each change being anticipated with great interest and adding new zest to life. There was nothing humdrum nor monotonous about life in a New England home full of children. Every season had its own peculiar charm for the young people, and although their hands were busy with the labor of the field and dairy, their minds were often filled with quite different things. In summer it was the Fourth of July celebration or the Sunday School picnic, and in the winter it was the Christmas tree, the donation party or a spelling school. The winter was the favorite part of the year because then was the time of leisure for sleigh rides, skating parties and sugaring off in the woods. In the winter, too, came the short term of school, welcomed not so much by the children for the opportunities for mental development, as for the social intercourse there offered. For the

time being the school became the center of the child life of the community, but every morning before school and every night after school the children had certain definite duties to perform in connection with the home. They were integral parts of the home, sharing in all its joys and sorrows, and feeling, to some extent, responsible for its maintenance. In the main, the work was done under the direction of the father and mother, but the wise parents encouraged the children to offer suggestions, which were followed when good, and to take a pride in their work. They also gave them opportunities for independent ventures in raising vegetables, fowl, or a calf or colt.

Some of the results of such manual training are well described by the following quotations from Harriet Beecher Stowe and Elbert Hubbard:—

In "The Minister's Wooing" we read as follows: "For you must know, here in New England, the people for the most part keep no servants, but perform all the household work themselves, with no end of spinning and sewing besides. It is the true Arcadia, where you find cultivated and refined people busying themselves with the simplest toils. For these people are *well read* and *well bred,* and truly ladies in all things. And so my little Marie and I, we feed the hens and chickens together, and we search for eggs in the hay in the barn. And they have taught me to spin at their great wheel, and at a little one, too, which makes a noise like the humming of a bee." . . . . .

"Faculty is the greatest virtue, and shiftlessness the greatest vice, of Yankee man and woman. To her who has faculty, nothing shall be impossible. She shall scrub floors, wash, wring, bake, brew, and yet her hands shall be small and white; she shall have no perceptible income, yet always be handsomely dressed; she shall have not a servant in her house,—with a dairy to manage, hired men to feed, a boarder or two to care for, unheard-of pickling and preserving to do,—and yet you commonly see her every afternoon sitting at her shady parlor window behind the lilacs, cool and easy, hemming muslin cap-strings, or reading the last new book. She who hath faculty is never in a hurry, never behindhand. She can always step over to distressed Mrs. Smith, whose jelly won't come, and stop to show Mrs. Jones how she makes her pickles green, and be ready to watch with poor old Mrs. Simpkins, who is down with the rheumatism."

Elbert Hubbard says in his autobiography: "I left school at fifteen, with a fair hold on the three R's, and beyond this my education in *'manual training'* had been good. I knew all the forest trees, all wild animals thereabout, every kind of fish, frog, fowl, or bird that swam, ran or flew. I knew every kind of

Manual training of the country boy.

grain or vegetable, and its comparative value. I knew the different breeds of cattle, horses, sheep and swine.

"I could teach wild cows to stand while being milked, break horses to saddle or harness; could sow, plow and reap; knew the mysteries of apple-butter, pumpkin pie, pickled beef, smoked side-meat, and could make lye at a leach and formulate soft soap.

"That is to say, I was a bright, strong, active country boy, who had been brought up to help his father and mother get a living for a large family.

"I was not so densely ignorant—don't feel sorry for country boys; God is often on their side."

Such manual training satisfies both propositions No. 1 and No. 2. We may never be able to attain to it in our public schools, but if it is the right kind, we can at least work toward it.

Whatever of suggestiveness may be found in the work at Hyannis gets its value, in large measure, from attempts to infuse into it the spirit which was in the old New England home.

In the old New England home the older children were encouraged to get into contact with the outside world by selling some of the products of their labor and buying something for their own use. The children in the school may well get into touch with the world of commerce in the same way. Some things should be made to sell. Let us see how this transforms the usual schoolroom conditions.

Commercial side of manual training.

A boy, with the advice and consent of his teacher, decides to make a basket to sell. At once a new atmosphere is created. It is not a question of pleasing himself nor the teacher; it is a question of producing a basket which the world needs and for which it is willing to pay. He must conform to the requirements of the market. The teacher is in a new rôle; she no longer stands over him, urging him to his task and insisting that the result must satisfy her. Will it sell? is the question now. He goes to the teacher for counsel, sympathy and assistance. She is his senior and the other children are his junior partners. All are anxious to have a basket that will sell. A similar condition comes about when the school garden products are sold and the money becomes the property of the class.

Relation of school to society.

A little thinking will lead one to see that not only the relations between pupil and fellow pupils are greatly changed, but the relation of the school toward society becomes very close and real. Here are splendid opportunities for laying the foundations of future good citizenship.

The end of education is service for society. But prior to this and fundamental is service for one's self; one should be self-supporting before he attempts to support another. He must feel and know that he can take care of himself. Self-support is the first thing; getting a living is fundamental. Most people spend most of their time in getting a living, but in getting a living they get all things, patience, perseverance, sympathy for others and an understanding of the needs of society.

Educational value of getting a living.

From getting a living for one's self one grows into getting a living for one's family and through the proper care of his family he comes into proper relations with church and state.

A community made up of people, every family of which is self-supporting, is a community well advanced in civilization.

The child should make and do things which he and his parents recognize as making a bona fide contribution toward his support; things which make him valuable as a producer.

The child a producer.

Our schools should send the children home to be home helpers. When the children graduate from our grammar schools at fourteen years of age they should know how to do all the various household duties. The girls should be able to do plain cooking, sewing, sweeping, dusting, etc. The boys should be able to care for their own rooms, mend their own clothes, care for garden and lawn, run the furnace and make simple repairs about the house and grounds. They should take as much pride in these various accomplishments as in any other form of school work.

The child to become a home helper.

It will often be found necessary to educate the parents up to allowing their children to do these things, but this is a part of the mission of the modern school teacher.

Educating the parents.

Let us try to understand our problem and then take a strong hold, striving to enlist all of the forces for good in educating the community through the children.

Education of the community through the children.

ATHLETIC MEET.

CHAPTER IV.

PHYSICAL TRAINING AND INDUSTRIAL TRAINING AS A BASIS FOR OTHER SCHOOL WORK.

For men have had to work in order to live. In and through their work they have mastered nature, * * * they have awakened to the sense of their own powers, have been led to invent, to plan and rejoice in the acquisition of skill. — *John Dewey.*

I like boys, the masters of the playground and of the street, — boys who have the same liberal ticket of admission to all shops, factories, armories, town-meetings, caucuses, mobs, target-shootings, as flies have; quite unsuspected, coming in as naturally as the janitor, — known to have no money in their pockets, and themselves not suspecting the value of this poverty; putting nobody on his guard, but seeing the inside of the show, — hearing all the asides. There are no secrets from them, they know everything that befalls in the fire company, the merits of every engine and of every man at the brakes, how to work it, and are swift to try their hand at every part; so, too, the merits of every locomotive on the rails, and will coax the engineer to let them ride with him, and pull the handles when it goes to the engine-house. They are there only for fun, and not knowing that they are at school, in the court-house or the cattle show, quite as much and more than they were, an hour ago, in the arithmetic class. — *Emerson.*

It has, until quite recently, been customary to speak of the three R's as the fundamental subjects of the school curriculum. In real life out of school one would never think of calling them anything but accessories. As a vision of a new school, where the children are living real lives, is gradually unfolding before us, we are coming to see that even here the three R's should be considered as tools, tools for the accomplishment of real work. What, then, are the fundamental subjects, the subjects upon which we may base the other lines of work and which may serve as points of departure for the other school subjects? Let us see how it is in the real world.

Fundamental subjects of the school

Agriculture, fishing, manufacturing, building, commerce, are the fundamental activities of civilized man. About these, and depending upon them, are the other activities of modern life. In other words, labor, skilled and unskilled, the dealing with physical forces, furnishes the basis of modern society. In connection with these activities and growing out of them are all professions, all sciences, philosophies and religions.

Just as physical activity is basal in the world of man, so is it in the world of the child. Man has grown out of the savage into the civilized state through his striving to minister to his physical needs.

Self-activity developed through play.

The young child is a helpless egoist, and whether we believe in the culture epoch theory or not we know that this child can come to be a person of self-control and consideration for others only through his own self-activity. The opportunities for self-activity come to the very young child through play. Through play he develops his body and mind along the lines of hereditary tendencies and imitation of persons and things in his environment. He assimilates and makes, in some measure, his own the things which he imitates.

Desire to work.

As he increases in understanding and power to do, he comes to desire to help his father and mother. He wishes to work. He may soon tire of it, but again and again he returns to it with renewed ardor, especially if his efforts have been crowned with success and he has been led to see that he has really been a helper.

The wise parent finds that in connection with this play and work of the child the best opportunities are furnished for effective lessons in morals and religion and in such nature study, history and literature as he is able to assimilate.

The child as he enters school.

When the child comes into the public school he comes with all his inherited tendencies plus many prejudices, both good and bad, which have been gained at home and on the street. Now if any of these are to be changed or if new ones are to be developed, it must be done, not through abstract precepts, but concretely, through example and practice. The boy must run up against things and people, must feel for himself how things work out. This is not fundamentally a matter of words, and books can be helpful only as they furnish supplementary material.

The natural way of development.

If school is to continue the development of the child in a natural way, along lines similar to those followed in the home, then the lines would seem to be two, viz.: physical training and industrial training. Of these the former will take the place of the play, and the latter of the work of the home.

The play instinct.

Since the time of Froebel some of the best child study has been done in connection with the plays of children. The best kindergartens have made much of the play instinct, and this influence is slowly working up through the grades. It has a firm hold in colleges through the athletics, and has made rapid headway in our high schools. It seems, however, to have had but little effect upon the grammar and intermediate grades.

Value of old-fashioned recess.

Recess time has been displaced in many places by brief physical exercises within the schoolroom. The school appears more mannerly, more subdued, more orderly. By this means there is not so much chance for lowering the moral tone by speech or action on the school grounds. But how about the phys-

ical condition of the children? Are we heeding the wise admonition of Professor Tyler and giving Mother Nature a fair chance to develop the chick? Could not all the objections to a recess time be overcome if teachers would play with their children? When one considers the matter it is surprising that we devote such an infinitesimal part of the school time to physical training. What if the teacher should expect to develop the mind of the child by one or two ten or fifteen minute number drills a day, leaving the rest of his mental development to chance? But is not this just what is being done in most of the public schools regarding the teaching of physical training? When one calls to mind the ordinary, regulation public school, of what does he think? Rows of desks and chairs filling the room, with a child in every chair. Does it look like a place fitted up for the physical development of the growing child? Professor Dewey was right when he said that the ordinary schoolroom was furnished for the listening child.

Insufficiency of gymnastic drills.

The modern schoolroom and physical development.

But we have become so accustomed to these schoolrooms with their cast-iron desks, and just as rigid rules, that it is hard for us to get the proper point of view. It may help us if we try to imagine President Roosevelt and his Rough Riders, after a lively gallop, placing themselves in those desks, there to sit for five hours a day, five days in the week, for forty weeks, and to do just what they are directed to do by a lady teacher. Would they do it? Would it not be a physical impossibility? Or if they, with their iron wills, held themselves to it for a whole year, how different their appearance would be! How the strength of muscle and eagerness of spirit would have diminished! But, some one suggests, that these are grown men who have been accustomed to their freedom in the open air. Yes, and as such, ought to be able to endure more hardships than growing children. Can anyone contend for a moment that the real, natural demands of the child for spontaneous exercise are not as great and as legitimate as are those of strong, healthy men?

Have we not a right, from the standpoint of the proper physical development of the child, to demand that schools shall be reorganized and put on such a basis that the physical side of the child shall receive due consideration?

Need of reorganization of schools.

Is it not time for us to realize that the proper physical development of the child has to do, not with fifteen or twenty minutes of gymnastic drills given five times a week, but with all of the physical activities of each of the daily twenty-four hours of the week? Not that the public school teacher can direct all of these, but she may know something about them and be governed accordingly.

Physical training and the whole life of the child.

Very excellent results were obtained by the ancient Greeks through their games and contests. We are trying to imitate the Greeks by the introduction

Introduction of games.

of games during regular school hours, at recess times, and before and after school. Valuable as are the games for physical training they may be much more valuable in the moral development. Much has been said of the value of football, basket ball and kindred sports in character building. Let us consider games of a different type.

Value of games in character building.

Take the game with marbles which is played out of doors by boys all over the land every spring. What training in accuracy, power of self-control, ideas of fairness and honesty are there! What opportunities for the teacher to guide the children into higher ethical standards! How many teachers utilize these opportunities? It is much easier to put the whole matter aside by forbidding playing marbles on the school grounds. And why should we not forbid it? "Why, those little savages are gambling! They call it 'playing for keeps.'" "But how do they happen to be playing for keeps?" The answer may be found in an experience which I had the other day as I passed by a group of rather small boys who were playing marbles. A young man whom they knew very well was just pausing to look at them. "Are you playing for fun?" he asked. "Naw, do you think we are babies?" was the disgusted reply. What a revelation of boy ethical standards was here revealed! Those boys are striving after their conception of manhood. It is manly to venture something and to stand your loss if you are beaten. The game requires skill, and it is manly to be skillful. Where, then, is the harm? Is it not in getting something for nothing —a disease which is permeating modern society and doing great harm? Can you expect to have the children see this? Not perhaps very clearly, but they may see that it is not quite fair nor right for one boy to get all of the marbles of all of the other boys because he can play a little better; that in every legitimate business transaction each party receives an equivalent for services or commodity rendered. They can see very clearly some of the results in the feelings toward the boy who gets all of the marbles and the effect upon him. One of the difficulties in dealing with the question will be the prejudice among the boys in favor of the game. If this is followed up it will be found that the boys are supported in their prejudice by a large number of respectable citizens, and that you have to deal with a social prejudice. You will also find that there is something in the nature of society to which this gaming responds. We all like to run risks, but some of us have learned to count the cost, not only to ourselves but to others. Here is a splendid game which appeals to boy nature and should be utilized in building up such Christian virtues as patience, self-control and consideration for others, and in helping the boy to understand the temptations and dangers of games of chance and of the stock exchange.

And this is typical of many games which we either forbid or entirely disregard. These would furnish the finest possible basis for understanding the ethical teachings of literature, sociology and history.

If, now, we agree that physical training of the kind here described is needed for proper physical and moral development, let us consider what industrial training has to offer.

Since the days of Pestalozzi and Froebel, leading educators have more and more recognized the principles which they taught. One of the most important of these principles is that the child can grow only through his own self-activity. Industrial training was the basis for all of the best work which was done at Neuhof, at Stanz and at Yverdun. Some of the most suggestive things in all of the writings of Pestalozzi may be found in his Leonard and Gertrude, where he pictures Gertrude as a teacher of her own children.

Industrial training in the schools of Pestalozzi.

"The children all helped wash the dishes, and then seated themselves in their customary places before their work. . . . First the children sang their morning hymns, and then Gertrude read a chapter of the Bible aloud, which they repeated after her while they were spinning, rehearsing the most instructive passages until they knew them by heart. In the meantime the oldest girl had been making the children's beds in the adjoining room, and the visitors noticed through the open door that she silently repeated what the others were reciting. When this task was completed, she went into the garden and returned with vegetables for dinner, which she cleaned while repeating Bible verses with the rest. . . . .

"Whenever Gertrude saw that anything was amiss with the wheels or cotton, she rose from her work, and put it in order. The smallest children, who were not old enough to spin, picked over the cotton for carding, with a skill which excited the admiration of the visitors.

"Although Gertrude thus exerted herself to develop very early the manual dexterity of her children, she was in no haste for them to learn to read and write. . . . The result of her system was that each child was skillful, intelligent and active to the full extent that its age and development allowed.

"The instruction she gave them in the rudiments of arithmetic was intimately connected with the realities of life. . . .

Correlation with other subjects.

"All that Gertrude's children knew, they knew so thoroughly that they were able to teach it to the younger ones; and this they often begged permission to do."

Froebel, imbued with the spirit of Pestalozzi, went a step further and said that the child must be not only a doer but a creator. He also said:—

Froebel an advocate of manual training.

"Every child, boy, and youth, whatever his condition or position in life,

should devote daily at least one or two hours to some serious activity in the production of some definite external piece of work. Lessons through and by work, through and from life, are by far the most impressive and intelligible, and most continuously and intensely progressive both in themselves and in their effect on the learner. . . . The domestic and scholastic education of our time leads children to indolence and laziness; a vast amount of human power thereby remains undeveloped and is lost. It would be a most wholesome arrangement in schools to establish actual working hours similar to the existing study hours; and it will surely come to this."

Manual training daily.

Now we all with one accord accept this doctrine of a *doing child*, and yet what do we allow him *to do* in the grammar and high school grades? As soon as we can get our hands upon him we bottle him up and put in the stopper until school is dismissed. As has been suggested, all of our school furnishings are arranged for physical repression instead of expression. And yet there is a brighter side.

Kindergarten spirit in primary grades.

We have but to compare the schools of to-day with those which existed a short time ago to notice what transformations have come about in the lowest primary schools and in the scientific departments of the colleges. In the near future we shall, I believe, see as great changes in the grammar and high school grades. In fact, the movement is already well under way. Already many of these schools have introduced cooking, sewing, wood work and kindred subjects with laboratory work in the sciences, and are giving considerable time to physical training. It remains to connect these more closely with the life of the child and to base the other school work upon them.

Beginnings in grammar grades.

Present problem.

Now comes the question which is troubling the most of us. How is this to be done? The problem is not one which can be worked out by any one school alone. We need first to realize that we have the problem and then each needs to attack it in his own way, for his own locality.

Need of observation and discussion.

A discussion of the kind of work attempted and the results obtained in various places ought to help toward a right solution of the problem.

It seems to me that such work as is now being done at Hampton and Tuskegee should be full of suggestions for us. Booker T. Washington is right when he says:—

Work at Tuskegee and Hampton.

"I don't believe it is right to teach people everything in heaven and earth and keep from them the knowledge of the means by which they earn their living. When we said we were going to put up our own buildings there were objections, and it was murmured that such a course could not be pursued with success, but we kept on teaching everything in connection with the construction of the build-

ings. The students had the experience of making the structures and we had the structures also.

"Out of our industries we have taught our people dignity and Christianizing power of laboring with the hands. We must put dignity and skill into all forms of labor and teach the negro to do things as well as they can be done. We are trying at the same time to lift labor up out of drudgery."

We do well to study such schools as Abbotsholme, Derbyshire, England, where the work of the day is divided into three parts: (1) the morning devoted to class work indoors; (2) the afternoon to physical and manual work out of doors; (3) the evening to music, poetry, art, and social recreation. Work at Abbotsholme.

The new textile schools like the one at Lowell may furnish many suggestions. Here are acres of floor space for machinery so that the student may get his fundamental knowledge through participation. Textile schools.

I have received much inspiration from visiting the School for the Blind in Philadelphia, where the students spend the hours from 8 A. M. to 5 P. M., except for a short period for lunch, in working, studying, and in physical exercises. The wonderful transformation which comes about in these children in a few years is cause for much admiration for their system of training. Suggestions from schools for defectives.

As one visits such schools as have been mentioned, he is impressed with the unanimity of the opinions of the principals regarding the value of the work. Here we see exemplified the new education. Quick says, "The old education had one object, and that was learning. Man was a being who learnt and remembered. . . . The New Education treats the human being not so much as a learner as a doer and creator." Old and new education.

The reader will have noticed that the schools to which attention has been called are all private schools. There are many reasons why it is easier to work out this problem in such schools. But if the public schools cannot lead in this matter, they must strive to face in the same direction. That is just what we are attempting to do at Hyannis. We are getting suggestions from all directions and trying various lines of work which seem to us well adapted to the children of this locality and appropriate for the public schools of Massachusetts.

We are introducing the various forms of industry mentioned in a former chapter, such as gardening, basketry, household work. At certain hours of the day one might pass through our Training School and find it a veritable manufactory, with every child at work. A public school becomes a manufactory.

During most of the day the school appears like any other public school.

except that if one stops to listen to the lessons he finds that most of them are correlated with some form of industrial work.

Suggestions regarding some changes in our public schools.

It seems to me that the public schools should commence earlier and close later; that the children should be kept tied down to their desks for only a short period at one time; that such periods should be followed by manual labor and games; and that at some time during the day, when the sun is shining, the class should be out of doors, either working in a garden, going to a park, or playing healthful games. With the introduction of more games into our physical training work, and of more industrial work properly correlated with the ordinary school subjects, there must come great changes in the physical condition and great improvement in the whole character of the work in the public schools.

THE PLAYHOUSE—FURNISHED BY THE PRIMARY DEPARTMENT.

CHAPTER V.

THE PLAYHOUSE AS A CENTER.

In the year of 1902 the teachers of the primary grades took the playhouse as the center of interest.

This playhouse was constructed in the manual training room at the normal school, in such a manner as to contain the principal rooms of a house. The children made things with which to furnish this house. The pupils of the lower grades had been studying the homes of other children of other lands and comparing their own homes with these, noting striking points of resemblance and difference in the kinds of house, the furnishings, and the clothing, and making such inferences regarding the reasons for the variations as their age and experience enable them to make.

The children of the first grade had been studying about Hiawatha, and they compared their own home, the Hyannis home with its furnishings, with the Indian home and its simple but necessary utensils. They were delighted to compare their food and clothing with his, their games and nursery stories with those which Hiawatha was taught by old Nokomis. In a similar manner they had studied about the little Esquimo and his home life.

The second grade children had studied the more striking features of the industrial and social life of the Esquimo, the Indian, the Dutch, the Japanese, and the Chinese children, always using their own experience as a basis of comparison.

The third grade children had studied the home life of the Dutch, Swiss, and Mexican children.

The fourth grade pupils had been very much interested in Robinson Crusoe and the things which he found necessary for his home.

It is easy for the thoughtful person to see how such work as this appeals to the little child. The teacher is continually asking him to tell about things of which he knows from experience and which he delights to talk about, especially when he is asked to compare his own house with the snow house of the Esquimo boy or the tent of the Arab boy, or his leather shoes with the wooden shoes of the Dutch boy.

Interest of children.

As the children study about these things, they are learning to read and spell and use properly the common words connected with their everyday life, and kindred technical words connected with the life in other parts of the world.

Development of vocabulary.

Thus their vocabulary, spoken and written, is growing hand in hand with the broadening of the horizon of their understanding. Not only the pictures and stories found in the children's books, but many others, are provided by the teachers. Sometimes, too, the teacher takes the children over to the normal school, where they are treated to a talk, supplemented by stereopticon lantern slides.

To those who understand children it is not surprising that they desire to represent those things about which they are enthusiastic in some other form than in words. They wish to do something with their hands,—to draw, to paint, to cut out, to model in clay, to weave, to sew, and to do many other things.

Means of expression.

This natural demand, which may be seen in every normal child, we try to satisfy by allowing him to attempt to represent some of these things about which he is coming to know. This is where our industrial training comes in, as a means of expressing some ideas which the child already has, and of gaining more and clearer ideas.

Some of the things which were made were used for furnishing the play-house, and every child was anxious to make something fit to go into that play-house. Rugs and portières were made in the first grade, furniture of tag-board and mats of raphia in the second and third, and the fourth grade children wove blankets and straw floor matting, made baskets, painted walls of the house, designed wall paper and stained floors. It is inspiring to see how enthusiastically the children work, how they love to do things and to do them well, how much patience and persistence is being developed, and how happy they are.

Earnestness and happiness of children.

CHILDREN WEAVING.

CHAPTER VI.

WEAVING IN THE FIRST AND SECOND GRADES.

Historically speaking, weaving for clothing, planting for food, and building for shelter are the three primal race occupations. Froebel believes that these three forms of activity are essential to normal development. Certainly, of all the forms of industrial work tried in our school, none is more popular with the children of the primary grades than weaving. Again and again comes from some child the request that he be allowed to weave.

The occupation is varied both in the things made, the materials used, and the method of work. It is an occupation suited to children of different ages in the primary grades.

I. Kindergarten Weaving.

One form of it, the pattern weaving with paper mats, has long been in use in the kindergartens. It is a source of so much pleasure to the little workers, that some years ago I introduced it into my first grade and carried on the work started in the kindergarten with which I was then associated. Many of the patterns are difficult enough to furnish an occupation adapted to a child ten or twelve years of age. I still use the pretty kindergarten mats of colored paper with my older pupils in first grade; and let them make them up into sachets by folding on the diameter and lacing the edges together with baby ribbon. They make dainty and acceptable gifts at Christmas time.

Pattern weaving with paper mats.

These little mats come in 7 x 7 inch squares, cut in strips one fourth inch, one third inch or one half inch wide, with a corresponding margin all around the mat. With each mat comes a set of strips of the same width as the strips of the mat, to be woven into it.

Material.

A strip is threaded into a steel weaving needle, sold by all kindergarten supply companies, and with it is woven over one, under one, through the strips of the mat, always leaving free the marginal strips. The strips are put in with the right and then the left hand alternately. Each strip as woven in is pushed up to the top of the mat, by use of the needle, on the wrong side of the mat. Other patterns are used, as "over two, under two," or "over three, under three," "over two, under one," etc. Some few are dictated, others are originated by the children. I dictate only the most simple ones used in the regular Kindergarten School of Weaving. The children then work out new patterns with their practice mats. These practice mats are also used in some kindergartens, and are made of marble cloth, cut like the paper mats with the half inch strips. Instead of weaving in another strip, a thin slat of wood one half inch wide is woven or laced over and under the strips of the mat, always leaving the marginal strips free as in the paper mats. These slats, made of thin light wood, are another kindergarten Occupation material, used in kindergartens for "slat lacing." They come in colors or plain. With the white marble cloth mats we use the colored ones. A mat cut from bright morocco leather, into which is woven the plain slat, gives very young children great delight.

Method of weaving.

Other patterns.

Use of practice mats.

Because of the perishableness of the material the paper mats require much manual skill in the little weaver. They are too difficult for the youngest children of kindergarten and primary grades. Therefore I use them only for the older children who have acquired some dexterity in using the slats and practice mat, and in weaving upon the tape looms.

Best adapted for use by older children.

II. Tape Weaving.

This is one of the most simple and attractive forms of the occupation. Upon looms 20 x 20 inches in size (or smaller if desired) we weave tape into quilts for a doll's bed, or a pillow-top for actual use. Most simple form of the occupation.

The tape used is an English make of white cotton tape, which we ourselves dye any color desired. Two tones of light blue, green or nut brown have made pleasing pillow-tops.

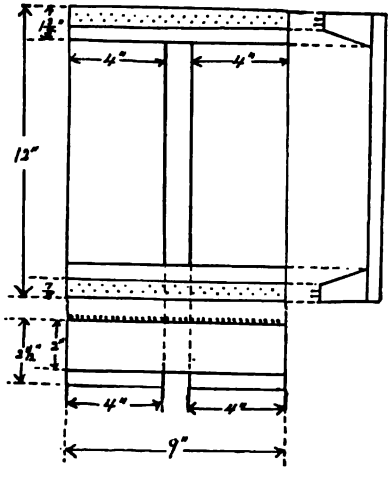


Fig. I.

The loom used is 20 x 20 inches, made upon the same model as the small loom described under Rug Weaving, and of which a working drawing is shown in Fig. 1, except that the brads in the ends are spaced three fourths inch apart and there is but one row of them. The two ends, each twenty inches long, are made from plank just as shown in the working drawing, and are joined by two strips of one half inch board, each about three inches wide. There is no heddle or shuttle for this loom. Strips of tape are fastened to the brads and stretched across the loom. With the steel weaving needle, used for the paper mats, the strips which form the woof are laced in, over one, under one, through the warp. The loom.

This simple pattern is the only one we find firm enough for the pillow-top of tape. Perhaps other materials would permit use of other patterns. Art denim cut into strips one inch wide, hemmed on the edges, and so woven has been used for some artistic pillow-tops on sale at Whitney's, Boston, this winter. Ribbon three fourths to one inch wide may be so used, or a light weight soft leather would make a pillow-top suitable for a den or library. Other materials suitable for pillow-tops.

The strips are woven in with the right and left hands alternately as in the regular kindergarten weaving. If the steel needle trouble the little worker, the strips may be woven in by the fingers alone. So used, this loom, like the practice mat, may be used by the youngest children, as there is none of the nervous tax which is involved in the use of the paper mats. Use of fingers with very young children.

Another form of weaving easy for the little people and which affords them much pleasure is—

III. Rug Weaving.

Beautiful and artistic rugs for a doll house, or a carriage mat for the doll carriage, are made of wools, rag, or jute, on small looms 9 x 12 inches in size.

Larger rugs are also made upon larger looms. The materials used are coarse Germantown wools, or jute, and for the rag rugs cheap outing flannel. We buy the five cent white outing flannel, dye it any color desired, tear it into strips about one fourth inch wide and wind it into balls. Then it is ready for use.

A two or three yard length so cut and wound is easily used and avoids too frequent splicing. The effect of these rag rugs is soft and pretty. The rug is firm enough, too, to be serviceable, and one of a size for actual use has been started in Grade II upon a loom 20 x 42 inches.

1. Looms.

The looms are made in our own manual training rooms and are modeled somewhat after looms seen in use in other schools. In Fig. I a working drawing of our smallest loom, 9 x 12 inches, shows its construction. The two ends are made from plank, and are joined by two strips of one half inch board, *screwed* on. The width of the boards need not be the same as in this loom but is a matter of choice or convenience. In the larger looms these strips are two to three inches wide, though the ends are made with the same general proportions as in the model. It *is* important that the ends be screwed rather than nailed to the strips which join them. It is also important that the brads be placed as in the model. It will be noticed that across the ends are placed two rows of brads, spaced one half inch apart, and alternating in position. To these brads the threads which form the warp are tied in stringing up the loom.

The heddle.

Fig. II shows a working drawing of the heddle used for this loom. This heddle is made from one eighth inch brass, is nine and one half inches long and three and one half inches wide. About one and five sixteenths inches above the lower edge is placed a row of holes one eighth inch in diameter. These holes are spaced one half inch apart and the first is one half inch from the left edge. Alternating with the holes is a row of slots, each one eighth inch wide and two inches long, spaced one half inch apart. One end of the slot is one fourth inch from the lower edge of the heddle. The heddle is used to separate the threads of the warp.

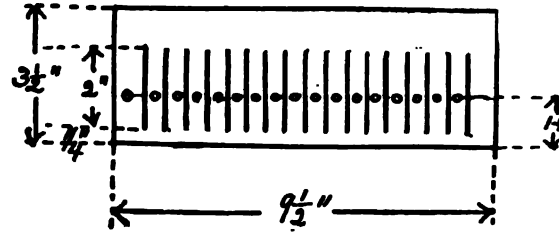


Fig. II.

The shuttle.

Fig. III shows the shuttle used. It is twelve inches long, one inch wide and one fourth inch thick. Each end is curved out as shown in the sketch so

as to hold the threads, and whittled down to a thin edge, that it may be pushed through easily without catching the threads of the warp. The thread (of wool, rag or jute), which is to form the woof, is wound on this shuttle.

The larger looms are made upon the same model and are 20 x 20 inches in size.

2. Stringing Up the Loom.

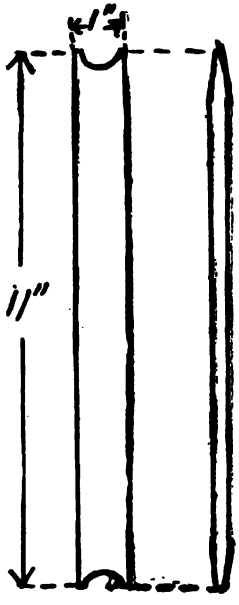


Fig. III.

To string up the loom satisfactorily is something of an art. It must be done tight enough to give firmness, yet not so tight as to prevent free action of the heddle. We use any common twine for the warp in wool and rag rugs. It is tied to the end brad at one end of the loom, passed through the first hole in the heddle (which is held midway between the two ends of the loom, in an upright position, and with the wider margin at the top), tied to the end brad in the opposite end of the loom, wound around the first brad of the alternating row in the same end, passed through the first slot and returned to the opposite end, where it is tied to the second brad. It is then wound around the next brad, and passed through the second hole in the heddle, to the opposite end and tied as before. In this way the entire loom is strung up. A large darning needle assists in passing the thread through the holes and slots. Also two can work to better advantage than one in stringing up the loom. We usually just start the weaving for the children.

3. Weaving.

Two children work together. One holds the heddle, while the other throws the shuttle. The heddle is heavy so that a child must hold it with both hands, firmly and evenly, midway between the two ends of the loom. If one end is held lower than the other, the child who is weaving finds it difficult to push the shuttle through without mistake. Held firmly and evenly and as near the middle of the loom as possible, it keeps the threads well apart and affords sufficient space close to the heddle for the shuttle fully wound to pass through. The heddle is held alternately up, then down. The weaver must pass his shuttle through, *close to the heddle,* first with the right hand, then with the left, as it is passed alternately from right to left and left to right. Care must be exercised

Co-operation of children.

by the little weaver to leave a loop of thread at each end when the shuttle is drawn through, lest the rug narrow in the middle. To avoid this the one holding the heddle pushes it up after the shuttle is passed through, while the weaver measures the loop and pulls the thread as tight as need be, but not tight enough to draw in the threads of the warp. The heddle is used to push up the web. In the rag rugs we sometimes push it up more closely by use of an unbreakable rubber comb. This strains the threads of the warp less than does the use of the heddle.

Measure length of threads of woof.

4. Splicing.

When we splice the threads of the woof, the fingers are used to put in the short end of thread. Then the new thread is drawn through with the shuttle to about one inch from the end of the old thread. The two ends are allowed to overlap about one and one half or two inches. The weaving is continued as before. If, when finished, any short ends appear on the rug where it was spliced, they are cut off. If the splice is made near the edge of the rug we always turn back the thread two or three inches. It is stronger if the splice is made as far as that from the edge.

Usually borders of a contrasting color are introduced into these rugs. With the rag rugs we obtained a pretty mottled effect by sewing together uneven lengths of flannel in two harmonious tones of a color. A pretty effect may be obtained by twisting two colors to form a thread of the woof.

Borders in rugs.

IV. Raphia Weaving.

The little people of the second grade find enjoyment in weaving for their doll houses a Japanese matting of raphia. The raphia is soft and pliable and gives a very pretty matting effect when woven. As in braiding, it is more pliable and more easily used if first carefully washed in warm water and dried.

Matting for doll house.

This matting is woven upon the larger looms, 20 x 20 inches in size. This loom is constructed upon the same general plan as the smaller one described. The two end pieces are made exactly like the working drawing for the loom described, except that they are each twenty inches long. They are joined by two strips of one half inch board, each about three inches wide. Some of the heddles are made from tin instead of brass. Though less expensive than the brass heddles, the tin ones are more apt to cut the threads. For the warp in raphia weaving we find a strong linen-colored linen thread best. We are using a hempen twine.

The loom.

The looms are strung up just as for the rag and wool rug weaving, using

a heddle. Instead of the shuttle we weave with a *needle*. The raphia comes in lengths too short to wind upon a shuttle. A long piece of reed, No. 5, with a slit in one end for an eye makes a good needle. The raphia is threaded into this needle as into a worsted or carpet needle. It is then woven in just as with the shuttle. Two children work as before, one holding the heddle alternately up and down. The weaver pushes his needle through close to the heddle as he did his shuttle, and uses the heddle to push up the web. Care must be taken in choosing the raphia to keep the threads of the woof of nearly uniform size, cutting off the fine ends when necessary.

Use of needle instead of shuttle.

The splice is made just as in the wool rugs. It is best to have the splice come at least two inches from the edges that the matting may have a *firm* edge. If designs are introduced for borders or all over weave, the pattern is put in with the needle just as in the ordinary kindergarten weaving. Without using the heddle the child counts the " over three, under one " of his pattern. When the pattern has been put in, the heddle is again used for the plain weaving.

The splice.

Introduction of designs.

These raphia webs are pretty for covers to piazza cushions and pillows filled with pine needles or short ends of raphia.

The children of first grade have made, from colored raphia, some artistic pillow-tops for use on the piazza. The loom is strung up with linen carpet thread or with raphia, using the heddle as for the matting just described. Two strands of the raphia are then threaded into a long wooden needle which we had made in our manual-training rooms. The needle is pushed through the threads of the warp close to the heddle as before, while the heddle is held alternately up and down. The woof is then pushed up by use of the heddle. A fringe of any desired length is left at each end. Thus there is a fringe at *two* ends of each side for the pillow-top. When completed the two sides are put together in such a way that the threads of the warp run vertically on one side and horizontally on the other. This gives a fringe for the four sides. It will be seen that this is but an application of the most simple form of kindergarten weaving, and is therefore suitable work for very young children. They can weave rapidly and are delighted with these pillows.

Raphia pillows.

BRAIDING AND SEWING.

CHAPTER VII.

RAPHIA WORK FOR FIRST AND SECOND GRADES.

One phase of the industrial work tried by children in the first and second grades of our school is braiding and sewing raphia. The charts show work of this kind done in these two grades. At first we decided that the little ones in the first grade should attempt only to learn braiding; and that those in the second grade should braid and sew mats such as are shown on the charts. Later it was found that the older pupils in the first grade could sew also. Since they were eager to make something of their braids, many have made the more simple form of mats.

Braiding and making mats of raphia in the first grade.

I. Braiding.

The first lessons are to teach the simple three strand braid. The raphia is tied in a knot, and a braid just started for each child by the teacher, before the time for the lesson. This end must then be fastened into a drawer of the desk, the window, or in any convenient place which the room may afford. The illustration shows a group of children at work. Two are braiding and two are sewing mats. I started the work with small groups of children. They were shown individually, again and again, how to hold and place the strands. In many

First lessons.

instances, I found that a child who could not braid from seeing it done was aided, through the muscular sense, by just taking his hands and repeating the motion until he got it. Again, one child has frequently taught another when I had been unsuccessful. How? I do not know. I know only that one child often can help another effectively at this busy time, and is glad to do it. Of course many of these first braids were loosely done; all were uneven. We think that a coarse twine or cord, or even the long corset laces used for stringing beads, would, perhaps, be better material for this first work in braiding. The braided cord may be used for whistle chains, scissors guards, etc.

Child helper.

The second step is to get the flat, close braid, which may be used for mats, hats, and baskets. Again we must just show the children how to hold the strands closely, and to press down with the thumb on the forefinger each time a strand is placed over. Also, how to keep the raphia flat like a ribbon as we place each strand over, that we may have a rounded edge on the braid. Throughout this work, we must exercise patience, and inspire the small workers with faith in themselves. For difficulties arise. Fingers are clumsy, the work new, first efforts crude. As the braid grows longer we must fasten it, not at the end as at first, but nearer the point where the child works. If working more than one or two feet from the point where it is fastened, he twists his braid and cannot keep it flat. Again, in fastening the braid into the window or drawer of the desk, care must be taken not to cut the braid. For convenience the braid may be loosely folded and tied with raphia, as on the charts, while working with it; but it is not wise to roll it tightly if it is to be used for sewing. Thus folded it is easily put away at the close of the period.

Second step.

One important step of this work is the splicing. It is very important that it be done quite nicely. Of course the children cannot, at first, do this, and a large class keeps a teacher busy splicing, when they are fairly started braiding. When a strand grows thin at the end it must be spliced. In splicing, select the thinner end of the new strand. About two or three inches from the end, place it upon the strand to be spliced and braid it in with it for perhaps an inch, just far enough to make it firm, then drop out the thin strand. Later it may be cut off, together with the short end of the new strand, which was left out. On one chart is a short braid showing two splicings. It is not well to put more than one new strand in a place, nor to braid with double strand farther than is necessary, as it makes the braid wider where the splicing occurs. We cut the ends if necessary to avoid this. For instance, where six pieces of raphia are used in a three strand braid, perhaps both pieces in one strand need splicing at the same time. If this be true, cut one piece so that the splicings of the same strand

Splicing.

shall be at least two inches apart. Our little people soon learn to tell us when a strand needs splicing, and to get a strand of raphia ready for it. Thus all can be kept busy and happy.

Raphia to be damp.

We find that the raphia is more pliable, and makes a smoother and better braid, if used when slightly damp. Therefore it seems better to soak it in warm water and let it partially dry before braiding it. It is well to soak each time only about the quantity required for the lesson. Too frequent soaking may injure the raphia.

II. Sewing.

First form of mat.

About six yards of braid are required to make a small mat like those on the charts. Each child who made six yards was permitted to try the sewing. A few made dolls' hats or baskets instead of mats. The most simple form of mat is made by sewing the braids side by side, so that the edges form the top and bottom of the mat. The stitch is taken through the middle of the braid and must not show on the edge. The teacher starts the mat for the little ones. A few stitches secure the braid from raveling. It is folded back to form the center for a round or an oval mat as may be desired. The center is started quite as the old-time braided rag rug of our grandmother's day, except that in that case the braid is face up, not edge up. The second illustration shows a mat of each form, round and oval.

Second form of mat.

The second form of mat, more difficult for the little people to hold and sew evenly, is made by placing the braid, edge to edge, and sewing through the middle of the braid, slipping the stitch as before. In this case the braid is face up. This makes a flat mat. It hoops more as the children sew, and requires more skill not to show the stitches. We sew with a fine strand of raphia and a carpet needle, English, size twenty-three. The children nearly always hoop the mats as they sew, but even if quite badly hooped, after pressing between a damp cloth and paper the mat becomes quite flat. On some of the mats appears a loop border. By pinning this simple loop for the children they can sew it on easily, using just an "in and out stitch." Perhaps I should say that we colored some of the raphia and by combining it with the plain obtained some artistic effects.

Interest in work.

It is needless to say that the children are interested in this work. They do not seem to tire of it, but are becoming critical of their own work, and eager to make a second mat which is better than the first. They have enlisted the interest of the home also. Parents frequently visit the school during the industrial period; and by purchasing the little mats have afforded an incentive to good work, and aided us in our effort to give to the work a definite aim for the

children. They have further aided the spirit of the work in many instances by supplying the children with other materials for braiding at home. Even in a very poor home the mother saved twine for the little daughter and taught her to braid it, also to braid long grasses. Another child found some loose, soft rope which she braided and sewed into a doll's hat as home work. At the time of the spring vacation, the children's interest had become such that we had many requests from the parents to sell raphia for use during the vacation days.

During the period for industrial work the children are allowed almost perfect freedom from restraint. They may gather in groups in any part of the

RAPHIA MATS.

room, sit or stand at work as they wish. Conversation is permitted. Often the children sing while working. One little boy in my class (who cannot sing) always whistles as he works. They have the privilege of moving about and looking at the work of others. Of course idleness is not encouraged, and the children are required to show the same courtesy and consideration for others as during the game and lesson periods. At the close of the period each child is expected to fold his work neatly and put it away. The children gather the waste ends of raphia cut off during the splicing, hang up any material that has been scattered, replace chairs, and put the room in order before singing the closing song. Thus all is in readiness for the work of the next day. At first

Freedom allowed.

this took some time, for the children needed help in folding and putting away work. Now, however, it takes but a few minutes. At first, too, the teachers had much work out of school hours, inspecting the work done and preparing material for the next lesson. Now, during the last ten minutes, the children see that their braids are spliced, needle threaded, and tell us if any need new work or material prepared, before they put away their work. This is a great assistance to us and helps the children to grow in self-dependence.

Effect upon other school work.

Frequently we are asked if this work does not interrupt the regular discipline of the school, or cause the regular work to suffer. Why should the regular work suffer? This work claims only one period of the school day, a period of thirty or forty minutes, and comes regularly at a definite time each day. The freedom allowed belongs to this kind of work. At first we saw a tendency in a few children to talk and leave their seats during the period devoted to silent seat-occupation. It was explained that though they have this privilege during the industrial period, it could not be given for all periods of work because it interrupted classes and disturbed those who wished to work quietly. No serious disorder has resulted from this departure from routine work. Indeed, we feel that it has directly helped to develop a right social spirit, that of the home and family. This spirit is manifest in the readiness with which the older children help the younger; in the pride and interest the entire class takes in the work of one more skillful than the rest; in their frankly expressed approval of one another's work; and in the eagerness with which they call our attention to any improvement in a child's work or effort. At the close of one lesson I was informed by an eager little maiden that Matthew, who had been very idle and careless for a week or more, had that afternoon made a whole yard of braid, and that it was good, too. Looking up, I saw a group eagerly measuring the braid and commending Matthew. The spontaneous and frankly expressed admiration of his little classmates had a good effect upon him and he is again working earnestly. We recognize that much of the work done, even the best we can show after months of labor, is crude. Yet we feel that, crude as it is, it has a value far greater than its intrinsic value; because through it the little workers are growing not merely in manual skill, but in habits of industry, self-activity and self-dependence, and a loving regard for one another.

Social spirit developed.

As teachers we try, in planning and directing the work, to keep in mind the motto Froebel gives us in the Mother Play—

"The things a child can make,
May crude and worthless be;
It is his impulse to create,
Should gladden thee."

CHAPTER VIII.

RAPHIA BASKETS.

That industrial work will soon be introduced into our public schools to a greater or less extent seems to be practically a settled fact. Just how this is to be accomplished, and what definite kinds of work will be best suited to the needs of individual pupils, grades, and schools, are the problems which many of us are now attempting to solve. The situation of the school, the home environment of the children, their age and natural ability, are factors to be considered in solving these problems.

Basketry a good form of industrial work.

Judging from our experience, basketry is one of the best forms of industrial training to be used in connection with the introduction of this work, as it may be adapted to any age or grade. One may make a very simple basket in less than an hour, or he may spend many days in working out an elaborate pattern.

The first question which occurs to a teacher who becomes interested in this work is, how shall basketry be introduced into a school where neither teachers nor pupils have ever made a basket, and possibly have never seen one made? It would seem that perhaps the simplest way would be to visit some school where the work is being done, and there learn how to start it.

Introduction of basketry at Hyannis.

So thought the faculty of the Hyannis Normal School when the question presented itself last December, and the first week in January one of the teachers went to New York that she might see children at work, take lessons, and bring back a definite knowledge of how to make a simple basket, and how to teach children to do the same.

The schools visited were the School of Ethical Culture, the Teachers College, and the Horace Mann School. Much may be seen in a few days in these schools, and much may be learned if one can see lessons started, children actually at work, and some of their finished baskets. Through the kindness of Miss Perrin, who has charge of the basketry in the School of Ethical Culture, much help was received in the way of materials used, lessons, and suggestions.

At the Horace Mann School the children were seen beginning baskets, much completed work was examined, and through the courtesy of Mr. Richards, supervisor of the manual-training department of the Teachers College, much was learned of the kinds of baskets made, materials used, and of weaving machines of various kinds.

Next raphia and reeds were obtained and some baskets made. One may observe with care, gain much from illustrations, and hear many lessons given, but unless he, with his own hands, makes a basket, let him hesitate to attempt to teach basketry.

After the visit to the schools mentioned, our work at Hyannis was begun. Other lessons have been taken, books have been used and much experimenting has been done, but the real start was the observation of the work as already described.

Material used.

First we obtained our materials, raphia and reeds or rattan. Hanks of raphia, as it comes from the seed stores, are represented in the background of illustration IV.

In this chapter only the baskets made from raphia will be described. The reed and splint work will be considered in a later chapter, although in illustration IV bundles of reeds and several reed baskets are shown.

Two types.

All basketry may be divided into two types, the woven and the sewed, but there is a large number of varieties of each of these two types. Baskets of both types have been made in the fourth, fifth, sixth, and seventh grades, using raphia and rattan. The baskets shown in illustration IV were made in these grades.

Several varieties.

In raphia we have made several varieties of the braided, twisted, and coiled baskets, and a combination of raphia and reeds.

Simplest basket.

The simplest basket is perhaps the one made by sewing the three-strand braid of raphia. The braids may be sewed flat, with the face up, making a thin, though strong little basket; or they may be sewed with the edge of the braid up, making a heavier basket.

The next one tried was a twisted basket, made much more quickly than the braided one, but requiring more skill and judgment.

Twisted Basket.

From eight to fifteen strands of dry raphia are taken; the number depending upon the size of rope one wishes. This raphia has previously been plunged into lukewarm water for about fifteen minutes to make it more pliable and to remove the dust, and then dried. Another strand of slightly damp raphia is threaded through a tapestry or worsted needle (No. 19 is a satisfactory size). If this strand is colored, the radiation of stitches can be much more plainly seen, and therefore more quickly taught. The rope of raphia is firmly wound at the end with the colored threaded strand, and the needle passed through the coil to make the beginning firm. The rope is then firmly twisted closely about the colored center and the stitches are taken over the rope and into the color until

the start is completed. Each stitch then passes through the preceding twist and at the right of the colored stitch, making the stitches radiate as in Fig. I. When a new strand is needed, the old one is left about one or two inches in length and twisted inside the rope and hidden. The new strand is inserted about three stitches back, duplicating or doubling these stitches, thus giving a strong splice.

FIG. I.

When the rope begins to taper, three or four strands of dry raphia should be carefully twisted into it, so that the ends are concealed, and held until the stitches fasten them securely. After about three inches have been sewed, three or four more strands should be inserted, and so on, adding a few at a time to avoid an uneven appearance of the rope, and keeping it always as uniform as possible. When the bottom of the basket is as large as desired, the rope is placed on the last coil of the bottom, and the stitches taken through the coil below, and so on, until the sides are as high as desired; then the rope is tapered very gradually by cutting strands from it, and the small tapering end securely fastened inside of the last twist.

COILED BASKET.

The coiled basket is started very much like the twisted one. The hard ends are cut from a small bunch or rope of dry raphia. It is then wound for about an inch with a threaded strand which is slightly damp, being held as flat as possible. The dampened strand of raphia is too wide to be conveniently used, but by splitting it lengthwise, two and often three pieces can be made from one strand.

The end of the rope that has been closely and smoothly wound is then doubled, or turned on itself, and, by passing the needle directly through the coil, held firmly in place. The coil is then wound smoothly for about a quarter of an inch, then another stitch taken through the coil, and so on, each stitch being about a quarter of an inch from the preceding one, until a completed coil has been made around the center; then each stitch is put in half way between the two stitches in the preceding coil, as a bricklayer lays his bricks. If, as the basket grows, the space becomes too long, two stitches should be put between instead of one. The inside and outside of the basket will be alike. The more smoothly the coils are wound, and the nearer the stitches are placed, the stronger will be the basket.

This basket resembles slightly those made by the Navajo Indians. A variation of this stitch, and one a little easier, is to pass the needle between the coils instead of through the center of the coil. A small coiled basket in the foreground of Illustration IV shows the stitches passed between the coils. The basket behind it, which is turned over, shows the stitch passed through the coil. After the first round is made one may plan to sew each stitch a little to the right or to the left of the stitches in the preceding coil, instead of half way between. Either of the last two mentioned stitches will give a radial effect.

When the thread with which one is sewing becomes too short to use, it is simply dropped into the coil, a new strand is taken, the end turned into the coil and then wound, holding the end in until it is covered, as in Fig. II. The threaded strand will often become small and twisted instead of remaining flat, but by occasionally twirling the needle between thumb and forefinger it will easily untwist and become flat. It may even become necessary sometimes to dampen the threaded strand. If it separates or breaks into several pieces it is better to take a new piece at once than to attempt to keep the several parts flat.

FIG. II.

As the coil begins to taper, it can easily be replenished by adding a few strands at a time; the threaded strand will be smoothly wound over all ends and will conceal them.

This sort of a basket may be made of any shape or size desired. A flat cover may be made and hinged to the basket with threads of raphia, or an overlapping cover may be used.

Other materials may often be used for the rope filling. One of our sixth grade boys made two very firm, strong baskets, using shore grass for the rope and winding with raphia.

Pattern in color.

This coiled raphia basket is one of the best in which to weave a little pattern in color. To do this, drop the winder or threaded strand into the rope; thread and use as a winder a piece of dampened colored raphia for perhaps an inch or less. Drop the colored winder, pick out the natural colored one from the rope, and go on winding and sewing with it a short distance, drop again and take the colored one from the rope and wind another inch of color, and so proceed, planning the colored spaces to come at regular intervals. At first it is well to mark with pencil where one will insert the color. Very simple straight lined designs are found to be effective when made in one, two or sometimes three colors as shown in Fig. III.

One of the chief charms of the basket work is the opportunity for variety in original design and for planning as to proportion, form, size, and color. Many

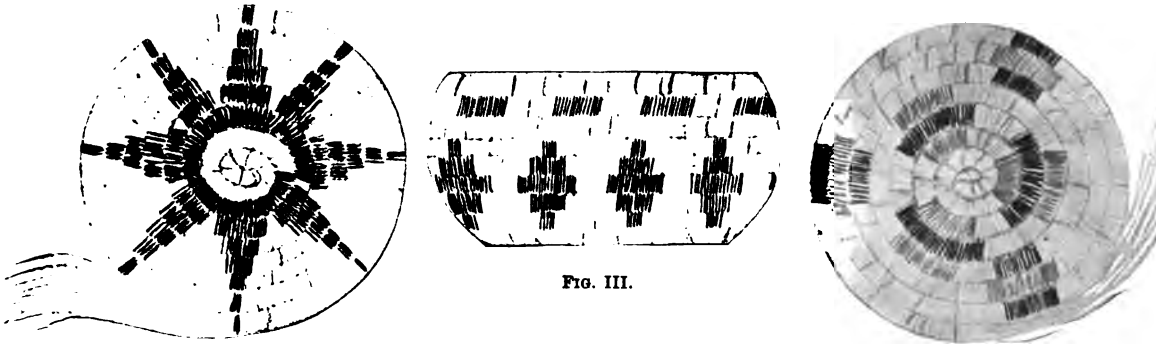


FIG. III.

useful lessons may be learned as one plans a basket or a simple design or pattern on the basket. Each wishes his basket to be a beautiful one and the question arises—what constitutes a truly artistic and beautiful basket? First, it must be suited to the purpose for which it is intended, as to shape and size. Next, as to color or colors, if there be a design in it having more than one color. Are the colors beautiful in themselves? Are they harmonious, and will they harmonize with the furnishings of the desk or room in which the basket is to be placed and used?

Variety in basketry.

Beauty of baskets.

While we feel that the work in basketry has been both pleasant and helpful for the children, yet we know that only a first step has been taken. The children must now be led to see that to have an artistic value each basket must be made for a definite purpose and should be suited to that purpose.

FIG. IV.

A LESSON IN BASKETRY.

CHAPTER IX.

RATTAN AND SPLINT BASKETS.

In the preceding chapter on basketry only the raphia work was described; but before any of the coiled raphia baskets were made some work was done with rattan. This is a kind of palm which grows in the forests of India, hanging from the branches of the trees. It sometimes attains to the length of five hundred feet, though seldom over an inch in diameter. We have found Nos. 2, 3, 4, and 5 most practical for school use. Rattan baskets.

Numbers 1, 0, and 00 are very fine, expensive, and hard for inexperienced hands to use.

The rattan comes in long twists or skeins of several pounds each. If each

piece be drawn out from the loop end, as it is needed, there is less likelihood of its becoming tangled and broken. It is very brittle and must be soaked before using. Usually from one to two hours of soaking in cold water, or a half hour in warm water, is sufficient to make it pliable enough to bend easily without breaking.

Preparation of rattan.

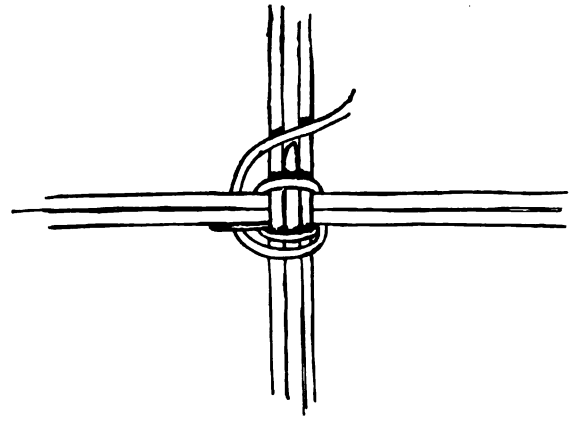


FIG. I.

The spokes which are to form the ribs of the basket should be at least two numbers coarser than the material used for weaving, except in small baskets or mats, where a difference of one number is enough. The spokes are cut into lengths of the required number of inches, depending upon the size of the basket or mat; they are then soaked. The smaller material, which is woven over and under the spokes and used as a filling, is called a weaver. This is wound into circles of about six or seven inches in diameter, the ends being twisted in and out several times to prevent unwinding. It is then in a convenient form to be placed in water.

With our rattan or reeds we first made a mat, then a single basket with few spokes, then larger baskets with more spokes. After this beginning (which is the hardest part of a basket) having been learned, a pupil could suit himself as to the shape, size, and kind of basket he wished to make.

Mat made first.

RATTAN MAT.

The required material is No. 3 rattan for the spokes and No. 2 rattan for the weaver. Four spokes are cut, each fourteen inches in length, and one, called a half-spoke, is cut eight inches in length. The two vertical spokes are then placed over the two horizontal spokes, at right angles to them and crossing them at the center. Between the upper halves of the vertical spokes, the half-spoke is placed, as is shown in Fig. I. A weaver, previously unwound, is then placed back of the upper vertical spokes, parallel to

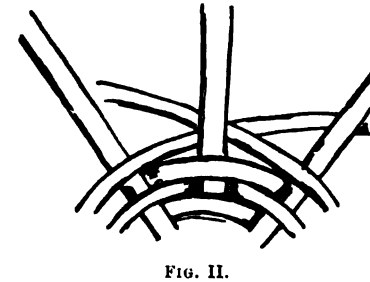


FIG. II.

the horizontal ones, with end toward the right. The weaver is then brought across the upper vertical spokes, under the horizontal ones on the right (thus holding the end of the weaver securely), over the lower vertical spoke and under the horizontal ones at the left, as in Fig. I. The weaver has now been once around; this is repeated, making two rounds, then the spokes are pressed apart, or separated into ones, and the weaving begins. The weaver is placed under the first upper vertical spoke, over the next one, under the next, and so on, separating the spokes as evenly as possible, so that they resemble the spokes of a miniature wheel. All the time the weaver is pressed with the forefinger under and over the spokes as close to the center as it is possible to get it. When there is just enough weaver left to go around once, the binding off is begun. This is much like the process in sewing known as overcasting. The weaver passes under one spoke, over another, then under the last row of weaving just before the next spoke. It now goes behind that spoke, in front of the next and under the last row of weaving before the next spoke. When one row of this binding is completed, the mat is ready for the border. The spokes are then cut to a uniform length with a slanting cut and wet until pliable. Calling any spoke No. 1, bend it so as to form a loop and push down beside the next spoke. Spoke No. 2 is then bent and pushed down beside spoke No. 3, and so on, until the border is completed, care being taken that at least an inch of each spoke is pushed below the edge of the mat.

If the spokes are at least four inches long after the binding off, a much more effective border may be made by crossing No. 2 with spoke No. 1 and pushing it down beside No. 3. No. 2 then crosses No. 3 and is pushed down beside No. 4, and so on around the mat.

A larger mat was made by taking longer spokes and two weavers. The joining or splicing of weavers has now to be considered. The new weaver should cross the old about one inch from the end, and behind a spoke as in Fig. II. The ends should be held in position while weaving one row. When the mat is finished, the ends where the joining took place may be cut shorter. Larger mat.

Our first baskets were small, requiring the same number of spokes as the mat. The new step was the turning up of the spokes to make the sides of the basket. After a small bottom was woven, the spokes were thoroughly wet and then turned sharply upward, if a basket with straight sides was desired. In doing this, care was required not to break a spoke. If curved sides were wished, each spoke was gradually turned up by bending several times over the middle finger. When modeling the sides of a basket, the side toward the person weaving is always the outside, and the weaving should go from left to right. If a strong, Making sides of basket.

useful basket is to be made, the finishing off is almost as important as the beginning. The binding off should be done when the spokes are at least four inches long. One common mistake with the children is to keep on weaving until only a short portion of each spoke is left, then the work has to be taken out or a very insecure finish is the result. One strong though simple finish is made by placing spoke No. 1 under or inside of No. 2, outside of No. 3, and between the weaver and spoke No. 4, ending on the inside. Spoke No. 2 is then placed inside No. 3, outside of No. 4, and between the weaver and spoke No. 5, and so on until all the spokes have been used. Then the ends on the inside may be neatly cut, but left long enough so that they are secure.

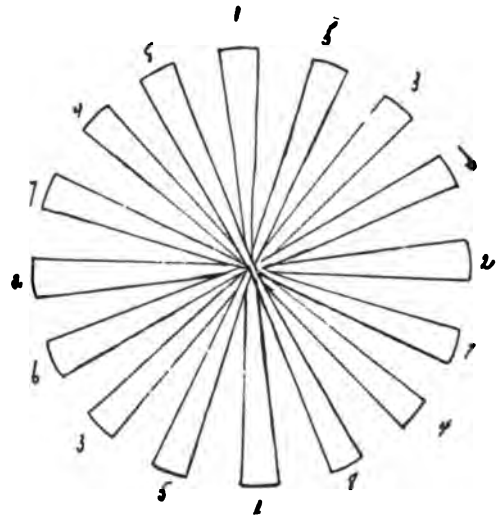


FIG. III.

Larger baskets.

Larger baskets are made by using more and longer spokes. When eight or more spokes are used, making four or more each way, beside the half one, the weaving is begun in the same way, but after the weaver has been twice around, instead of separating the spokes singly,—or in ones,—they are first separated into groups of two or more each, and two rounds are then made with the weaver between these groups. The spokes are then separated into ones and the regular weaving begins.

Raphia as a weaver.

The beginning of the rattan basket is sometimes varied by using raphia as a weaver until a good start is made, then a rattan weaver is inserted and the working proceeds as in a regular basket. A flat, strong beginning is made of the raphia if the horizontal spokes are slit in the center for about half an inch, or just far enough to slip the vertical spokes through them.

If a large, heavy basket is to be made, and rattan as coarse as No. 5 used for spokes, it is hard to make a flat bottom unless the horizontal spokes are slit and the vertical spokes slipped through them.

Variations in shape and size.

Rattan baskets may be varied as to shape and size, and, by introducing a braid of plain or colored raphia or a large reed wound with the same, quite a different aspect may be given to the basket.

I must not neglect to speak of one more way of learning to make baskets. Sometimes one is able to find an Indian or some person in a village who knows

the art and is willing to teach it. The baskets may not be as beautiful as the raphia and rattan ones, perhaps, but are strong and useful. One of our teachers succeeded in making the acquaintance of an Indian woman in Hyannis, who gets her material from the woods and makes a plain, durable basket. Some lessons were taken, as shown in Fig. III, and splint baskets made from the maple obtained from the woods. Square-bottomed baskets were made, which were started like the over and under kindergarten weaving. Flat splints of maple were used, as shown in Fig. IV. The splints were wet and turned up and weavers of narrower splints were used as a filling for the sides of the basket.

Splint baskets.

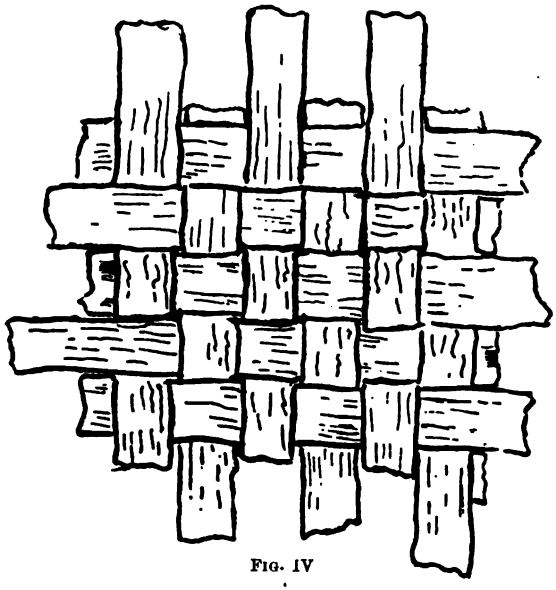


FIG. IV

A round-bottomed basket was made. To form this the splints were tapered toward the center.

I have described only a few of the simpler kinds of baskets, but the ingenious teacher will enjoy working out modifications in form and design.

We feel that our work in basketry has only begun, but the children are beginning to look about for materials and some simple experiments have been tried, so that we hope in time to be able to make a practical use of some of the materials found in this locality.

MAKING MELON BASKETS.

CHAPTER X.

MELON BASKETS.

The melon basket when well made is both useful and beautiful; consequently it is salable. It derives its name from its resemblance in shape to the half melon. The size of the basket may vary according to taste. We usually make the smaller ones as here described. We think them more salable, being more reasonable in price, and then the children do not tire of making them as

Useful and beautiful.

quickly as they do the larger ones. The first step in making one of these baskets is to braid about four yards of raphia, using two pieces of raphia in each strand, leaving one end in readiness for further braiding. It is not advisable to braid more than four yards at first, as a longer braid cannot be well handled. A good, even braid may be obtained by following directions for braiding in Chapter VI.

First step in construction.

Second step.

The next step is to cut the spokes which are used in making the frame. These may be cut from either No. 5 or No. 6 rattan. We consider No. 6 preferable, it being easier to work with and making a stronger finish. These spokes are of different lengths. One is $20\frac{1}{2}$ inches long, one $18\frac{1}{2}$ inches, and six are $8\frac{3}{4}$ inches. Each of the longer spokes are now spliced together and tied securely with raphia, thus forming two rings. These splices may be made in different ways, two of which are shown in Fig. I and Fig II. The larger ring is then sprung inside of the smaller one, leaving a little more than half of the larger ring for the handle of the basket, as shown in Fig. III. The rings may be more

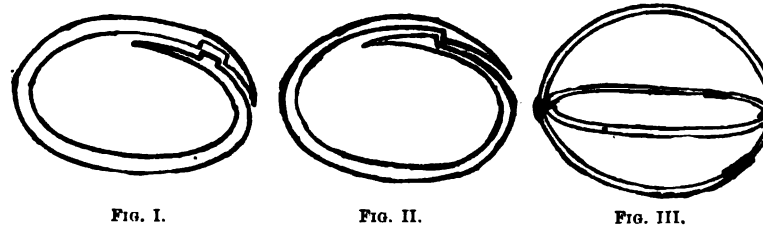


FIG. I. FIG. II. FIG. III.

firmly secured by making grooves in the smaller ring at the points where tied together.

Our frame is now completed and the raphia, previously braided, is ready for use.

Two starting points.

There are two starting points in this basket, one at either side of the handle, and our braid is placed back of the handle at one of these points, along the rim spoke with its end to the right. It is now brought forward and diagonally down over both handle and rim spoke at right, then back of rim spoke and diagonally again over rim and central spoke, then back over central spoke and diagonally again over central and rim spoke at left. This is continued until the corner is of desired size, which may vary according to taste. When well done, this corner is diamond-shaped.

Covering the handle.

The braid is now used for covering the handle, which is simply wound firmly to the opposite side in such a way as to cover the rattan entirely and another diamond, corresponding in size to the first, is made.

Next the short spokes are sharpened at both ends and placed in our frame, three on either side of the central spoke. These are arranged in such a way as to form the melon-shaped basket. It is quite necessary to be very careful here in order that the ends of the short spokes may not appear outside of the basket. In order to avoid this difficulty, a needle is threaded with a piece of raphia and the separate braids of the diamond caught together. Placing spokes.

Now commences the simple over and under weaving, that is, if we have a sufficient length of braid. If not, we must braid a yard or two more, and, as it is very difficult to work with a long braid, it is desirable to braid a little at a time and braid frequently. This weaving is continued until the spokes are well covered. Then the end of the braid is fastened inside of the basket in such a way that it is scarcely noticeable. This may be done in any way that seems desirable so long as it is a neat finish. We have found the simplest way is to taper the braid, wind the end with a thread of raphia and sew a few stitches to prevent raveling. Then fasten this tapered end under one of the braids of the diamond. Weaving. Fastening the end of the braid.

The material required for one of these baskets is as follows:— Material required.

One $20\frac{1}{2}$ inch spoke of No. 6 rattan.
One $18\frac{1}{2}$ inch spoke of No. 6 rattan.
Six $8\frac{3}{4}$ inch spokes of No. 6 rattan.
One quarter pound of raphia.

Very beautiful and various colored baskets may be obtained by using the colored raphia.

These baskets may be used for flowers, candies, pins of various kinds, combs, or fancy work, but they are so beautiful in themselves that they do not need the useful side to recommend them. Use of baskets.

KNOT-STITCH BASKET.

CHAPTER XI.

KNOT-STITCH BASKET.

This dainty basket illustrates one of the many artistic creations that can be designed by the use of the knot stitch. The fascinating knot keeps one's attention riveted to the work, and the finished production compensates for the time spent in its construction.

Directions.

Begin about two inches from the end of a long No. 2 reed and whittle down gradually to the end. Soak the reed well in warm water until pliable. After the raphia (natural color) has been washed and split, commence the basket by winding the part whittled, with a single strand. Then turn the reed back on

Material made pliable.

Sewing raphia over reeds.

itself for a quarter of an inch; draw the raphia through the loop thus formed and sew over and over. Use No. 20 chenille or tapestry needle for sewing.

Position.

Keep the reed to the left and pressed closely against the small loop. Then wind the raphia over the upper reed, holding the work in a vertical position. Pull the raphia down on the back, under the second reed; draw needle through and up in front of two reeds, over to back; draw the needle through between the upper reed and the one just below it, to the left, then in front of, and to the right of, the long stitch, then through to the back. Pull the strand of raphia tight and wind it around the upper reed once.

Knot stitch explained.

Stitch repeated.

With the unwound part of the reed held firmly in the left hand, continue making one knot stitch and one plain stitch between, viz.: Wind raphia smoothly over the upper reed; put needle under next lower; draw through and up to form the long stitch; over one reed; draw needle through, between upper reed and the one just below it, to the left, then in front of, and to the right of, the long stitch, and lastly through to the back. Pull tight and wind around the upper reed once.

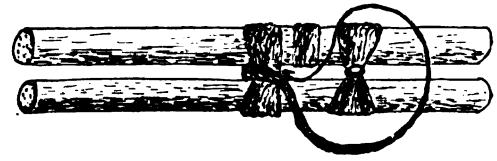


FIG. I.

Directions reviewed.

Heavier strand introduced. Center.

Unless a very fine basket is desired, a heavier strand of raphia can be used, after a center (the size of a ten cent piece) has been worked. The center should be finer than the rest of the basket. This applies to both the basket and cover.

Green raphia used.

Pattern for bottom.

Continue with the plain color until twelve rows have been made; then thread the needle with green raphia, and, after having laid the end of the old strand flat against the reed, commence making the knot stitch with the new color. Make two rows of green, six of white, three of green, and four of white, before turning up the basket to form the side.

Splicing a new reed.

When a second reed is needed, splice by whittling to a long, flat point, an inch from the *upper* side of one, and the same from the *under* side of the new reed, so that the two matched pieces are the size of one reed. Match carefully and hold firmly with the left hand until bound securely by the knot stitch and winding.

SIDE OF BASKET.

Where bottom and side meet.

The side should turn at right angles to the bottom of the basket. Continue to work with the same reed as before, holding it flat to the *side* of the under reed for one row around, instead of on top of it. Make two rows of white all around.

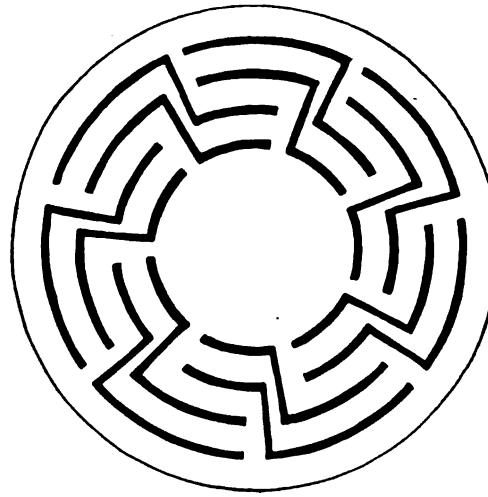


FIG. II. PATTERN.

Stitches—

1 white	7 green	1 white			all around	
1 white	7 green	1 white			"	"
8 white	1 green				"	"
8 white	1 green				"	"
8 white	1 green				"	"
2 white	5 green	1 white	1 green		"	"
2 white	5 green	1 white	1 green		"	"
6 white	1 green	1 white	1 green		"	"
6 white	1 green	1 white	1 green		"	"
6 white	1 green	1 white	1 green		"	"
5 green	1 white	1 green	1 white	1 green	"	"
5 green	1 white	1 green	1 white	1 green	"	"

Groups of nine stitches.

(When finishing these last two rows, the last " 1 green " will join " 5 green," making it like the rest of the row.)

8 white				1 green	all around
8 white				1 green	" "
8 white				1 green	" "
7 green	1 white	1 green			" "
7 green	1 white	1 green			" "

(When finishing these last two rows, the last " 1 green " will join " 7 green.")

Two rows of white knot stitches complete the top of the basket.

When near the end, whittle the reed to a thin strip and finish neatly. This

wing raphia
er reeds.

osition.

Knot stitch
explained.

Stitch
repeated.

Directions
reviewed.

Heavier
strand
introduced.
Center.

Green raphia
used.

Pattern for
bottom.

Splicing a
new reed.

Where bott
and side me

...ty-one rows on the side of the basket. Leave the loose ...
...ch which to fasten on the cover. If the number of stitches ...
...not form the pattern, so that the green lines are symmetr...
...tract from them, so as to make the design complete. Some pe...
...er stitches than others; or the raphia may be coarser or finer: p...
...ed evenly.

Cover.

...the cover exactly like the bottom of the basket—twelve rows w...
...green, six rows white, three rows green, four rows white. Fi...
...as before by whittling the reed and continuing knot stitch to the ...
...the part of the cover on the back edge of the basket and fasten sec...

Handle.

For the handle ring on the top of the basket, soak well in warm wate...
...piece of reed; to splice this, make a notch near each end, so that wh...
...ed it will not slip. (This splice is like the one described in the chapter ...
"Udon Baskets.") Bend the reed carefully to form a circle, and, wi...
...needleful of raphia, sew over and over from left to right, around the ri...
Cover this handle with a buttonhole stitch of the same. Fit it into the s...
hole in the center of the cover and fasten it securely inside. When finish...
this ring measures one inch in diameter, three quarters inch for inside mea...
urement.

Clasp.

Have a small piece of reed well soaked to render it pli... Shape it...
a double oval, and bind securely where joined. Wind a strand of raphia ...
and over, around the clasp, then buttonhole the same to ...
cover. Fasten the top of this double loop to the front edge of ... When
finished, the clasp should measure one and three quarters ... inches ...
loops.

Covering clasp

Covering double loop

Measurement

Clasp Loop.

Buttonhole a small piece of reed and bend it ... Thread ...
through a ... hole in the clasp, ... from ...
and lower edges of ... clasp ... firmly. ...
and sew ... over it.

Position of clasp loop

Finishing stitches

If desired, a small piece of rattan can be slipped through the loop to hold e cover close. That it may not be lost, a hole is bored in this inch piece of ttan and it is fastened to the basket by a bit of raphia. Tie one end through .e hole in the rattan and the other around the lower loop. Added suggestions.

Other designs may be used and worked out by planning carefully before utting in the new color. Count the number of stitches and calculate the size f the design that is to be used. Any harmonious colors may be employed. If heavier basket should be preferred, use No. 3 or No. 4 reed and do not split ıe raphia. Other designs. Heavier baskets.

CHAPTER XII.

BRAIDED RAPHIA HATS.

As the spring season advances, straw hats are thought of and the older children are interested in making a hat that they will enjoy wearing during the summer.

Our most popular hats are made of a five strand braid of raphia. Unless the raphia is exceptionally wide, ten pieces are used, two pieces for each strand.

Having been previously washed, the raphia is pliable and clean. The ten pieces are tied in a knot at one end. The knot is then fastened to some hook or drawer, or held by some person; then the braiding begins. One should start

with the right hand strand and use it as a leader or weaver. Place it over the second strand, under the third, over the fourth and under the fifth or last. Thus the first strand has gone from right to left and is now the fifth. Again begin with the one at the right and braid as before. So continue, beginning always with the right hand strand and weaving it over and under until it becomes the fifth strand at the left. Smooth the braid with the thumb and forefinger, and keep it as flat and as even as possible.

The five strand braid.

From twelve to eighteen yards of braid will be needed, according to the size of the hat. The splicing of the five strand braid is similar to that of the three strand, described in a previous chapter.

Amount of braid required.

A seven strand braid is made like the five strand, only fourteen pieces are used instead of ten, two for each strand. It is a little more difficult but makes a wider braid and is preferred by some.

The seven strand braid.

After the required number of yards has been made, the knot at the end is cut off. The end is then wound neatly with a small piece of raphia and a few stitches taken through this end to keep the braid from raveling. A thin piece of raphia is then threaded to a tapestry or chenille needle (No. 20 or 21 sharp points), and the sewing of the hat begins. The center of the crown is the starting point. The braid is coiled about the small center, keeping the little end piece underneath and out of sight. The edges of the braid are sewed together as a braided rag mat is sewed. The flat side of the braid is always kept face up, and the needle is slanted from one row of braid to the next, the stitches following as far as possible a strand in the braid and not being prominent on either the right or wrong side. This is especially desirable when sewing the brim, as in trimming the hat one may wish to bend or turn up the brim, in which case both upper and under sides should be well finished.

The sewing of the braid.

In sewing as above described, the edges of the braid just meet, so that the finished hat has the appearance of a coarse leghorn.

After enough braid has been sewed to make the top of the crown the desired size, it is dampened and pressed with a warm iron on the wrong side. Care should be taken that a cloth is placed between the braid and the iron, as raphia scorches very easily. In sewing the braid around the top of the crown to make the required depth, a wooden block is used. Any carpenter will turn one out for about twenty-five cents. The ones we use most are about five inches in diameter and six inches deep.

Pressing the crown.

The top of the crown should be placed wrong side up on the block and fastened with a thumb tack. Then as many rows are sewed around the block as one wishes, according as a low or high crown is desired. Before removing

Using the hat block.

the crown from the block, the sides are dampened and pressed on the block. It is then removed and turned inside out, as we have been sewing on the wrong side.

Sewing of the brim.

With the next row we begin the flat brim. Care must be used in holding this braid as nearly as possible at right angles to the crown. When the brim is the desired width, a narrow piece of flat wire taste is sewed under the last braid. Then a braid is put over the wire taste, making a double braid for the edge of the brim. This gives a firm finish to the hat, and the insertion of the wire taste enables one to bend the brim into any desired shape.

Insertion of wire taste.

The overlapping braid.

Instead of sewing the braids edge to edge, as has been described, they may be overlapped for about a quarter of an inch. This makes a firmer hat and one more nearly like the ordinary store straw hat. The back stitch is used in sewing the overlapping braid.

Use of a wire frame.

Still another plan has been tried, the sewing of the wide flat braid over a wire frame. This gives what the milliners term a "made" hat. A particularly successful one was made of black raphia. Scarlet poppies and scarlet ribbon was a pleasing combination on a natural colored raphia hat. Black velvet ribbon and dark purple grapes formed an effective trimming on the hat of one of the older students.

Raphia belt.

Uses for wide braids.

After the five strand braid has been mastered, from fifteen to twenty strands may be used and a useful and attractive raphia belt made. These belts are particularly pleasing with the summer linen suits. Wide, flat braids—from seven to ten strands—are effective when used as weavers in some of the larger baskets.

CHAPTER XIII.

RATTAN FOOTSTOOL.

One of the most useful articles we have yet made is the rattan footstool. This stool originated with Mrs. F. E. Hutchins of Boston, and the top was designed by Miss Grace P. Nash of Harrington, Maine.

A wooden framework is the first requisite. This consists of a circular wooden top, twelve inches in diameter and about one inch in thickness. This top may be of one or two pieces of wood. If two pieces are used, each should be about a half inch in thickness and so riveted together that the grain of the wood is horizontal in one and vertical in the other. If arranged in this way, warping is prevented. The top is fastened to four short dowels or legs about four and one half inches in length. About two inches from the top two cross-bars connect the four dowels. On the under side of the top there are ten holes between each two dowels. These holes are three quarters of an inch apart, a

Wooden foundation.

quarter of an inch from the edge and the size of No. 5 rattan. Through each crossbar, about two and one half inches from the dowel, is a hole three sixteenths of an inch in diameter. The dowels should be at right angles to the top and fastened securely, otherwise the stool will not be plumb when placed on the floor.

About a half bunch of flat winding reed is needed for each stool. From the loop end, select and cut four pieces one and three quarters yards long. Soak these pieces for about ten minutes, then begin to wind the dowels. By making a slant cut on the winding reed, it may be tapered so that the end can be easily concealed. Begin a half inch from the end of the dowels and thus leave room for the betwells to be put on after the stool is completed. Place the tapered end downward, and, holding it firmly, wind carefully around the dowel, concealing the end and covering the dowel smoothly with the reed. Do not overlap the reed, but let each edge just touch the preceding one. Continue winding until the place is reached where the crossbar joins the dowel. The reed is then passed through the hole in the crossbar and back of the dowel, again through the crossbar and around the dowel. Three times the reed is passed through the bar, being careful not to twist it in any way. The rest of the dowel is then wound and the end fastened to the under side of the top with a double-pointed tack.

Winding of dowels.

After the four dowels are wound, two pieces of the flat reed three and three quarters yards long are selected and soaked for the crossbars. These are wound in a similar way to the dowels, except that the winding begins just as closely to the dowel as possible and it is ended with a half hitch. A small two ounce tack is sometimes placed in the half hitch as an extra precaution against slipping.

Winding of crossbars.

The bars and dowels being neatly wound, thirty-two pieces of No. 5 rattan three inches long and forty-eight pieces thirteen inches long are next cut. Glue one thirteen inch piece into each hole on either side of the four dowels and a three inch piece into each of the remaining holes, making eight thirteen inch pieces and thirty-two three inch pieces. The stool must then be left until the glue is dry and hard.

Gluing in the spokes.

No. 2 rattan is next soaked for about fifteen minutes. Six weavers are sufficient. Three weavers are placed behind three consecutive spokes. Begin with the one farthest back to the left, place it in front of two spokes and back of one; again take the weaver farthest back and place it in front of two and back of one spoke. Continue weaving until four rows have been made. This is commonly called the triple twist. To keep this twist even and prevent the spiral appearance which it sometimes has, the weavers should be reversed at the end of each row; that is, after the first row is completed, the first or right

Triple twist.

hand weaver is placed in front of two and back of one, then the second weaver is placed in front of two and back of one, and lastly, the third or one farthest back, which is usually the leader. This finishes the first row of weaving; then the weaver just used is used again, and the weaving continues as at first. At the end of the second row the weavers are again reversed, and so on reversing at the end of each row, then continuing as at the beginning. The three extra weavers allow for splicing. Each dowel is counted as one spoke in this weaving.

Reversing the triple twist.

To the left of each upright spoke we next place a thirteen inch piece of No. 5 rattan, pressing it down into the triple twist until it reaches the wood. An awl may help in doing this.

Inserting the long spokes.

Two rows of pairing are next needed. If a very long piece of No. 4 rattan is used, no splicing will be needed. This piece of No. 4 should be soaked a half hour. It is then doubled and the loop end placed over one dowel, including a thirteen inch spoke on either side of dowel. Make a twist of the rattan around two long spokes taken as a group. After this the spokes are separated, so that a V is made of one long spoke and a short one. Pairing is then made around each group. A long and a short spoke will constitute a group until the next dowel is reached, then the dowel and a spoke on either side are counted as one group. Two rows of pairing should be made and ends neatly tucked in out of sight.

The pairing.

The footstool must now be soaked until the long thirteen inch spokes are pliable. It will take from one to two hours. The stool should be so fastened or balanced in a tub of water that the spokes may be wet below the pairing, but the wooden top and triple twist kept dry.

When pliable, the long spokes are woven into a neat finish. First the second long spoke at the right of each dowel is cut, leaving it the same height as the three inch spokes. Next, beginning with any long spoke, place it in front of two groups, back of two, in front of two, and the end put into the pairing just before the next group. The next long spoke is then taken and placed in front of two, back of two, in front of two and the end put into the pairing just before the next group. So continue with each long spoke. The dowels are *not* counted in this weaving and the spokes are placed either back or front of the dowels, whichever way makes the neatest finish, being careful, however, that the four are finished alike.

Finishing the lower part.

When beginning this finish, six small pieces of rattan may be put in the six first places before the first groups to keep these places open for the last six spokes. These last six spokes must be woven carefully, counting the first spokes as if they were still upright.

The ends of the thirteen and three inch spokes may now be clipped. Next the top is woven. The lightest of the winding reed is selected and one hundred and ten pieces twenty inches long are cut. An ordinary molding board may be used in making the top. We have found a board about two feet square to be a convenient size. About four inches from one end a horizontal line is drawn, and on this line thirty-seven double-pointed tacks (No. 11) hold in place thirty-seven pieces of the winding reed placed vertically. The nineteenth tack is doubled so that the center piece may be quickly found without counting.

Weaving the top.

The following directions are used in weaving the top:—

First row—Under three, over two, under two, over two, under two, over three, under two, over two, under two.

Second row—Over one, under two, over two, under two, over two, under one, over two, under two, over two, under one, over two.

Third row—Over three, under two, over two, under two, over two, under three, over two, under two, over two.

Fourth row—Under one, over two, under two, over two, under two, over one, under two, over two, under two, over two, under one.

Fifth row—Under three, over two, under two, over three, under two, over two, under three, over two, under one.

Sixth row—Over one, under two, over two, under one, over two, under two, over one, under two, over two, under one, over two, under one.

Thirty-seventh row—Under one, over one, under two, over two, under two, over two, under three, over one, under one, over one, under one, over two.

In weaving the top begin in the center; "under three" means under the three center ones of the first row, then over two, under two, over two, etc., are the directions for weaving at the right of the center. Then the same must be repeated at the left of the center. In short, these directions are for the center and one side, and the other side must be woven in the same way.

After the sixth row has been completed, a tiny thread may be tied to show that it is the sixth row, then the first row is woven again, then the second, and so on, until six more rows have been woven. Continue weaving until six groups of sixes or thirty-six rows have been completed, then the thirty-seventh row is made, and after that the groups are woven backwards; thus, directly after the thirty-seventh the sixth is made, then the fifth, fourth, third, second, first. A tiny thread is again used, this time to mark the first row. Next the sixth is again woven, the fifth, and so on, until six groups or thirty-six rows have been woven backwards. The material for the top should be damp when working and the pieces kept as nearly horizontal and vertical as possible.

Padding the top.

A soft padding of several thicknesses of glazed wadding may now be firmly tacked to the wooden top of the stool.

Fastening the woven top to the wooden top.

While damp the center of the woven top is put over the center of the wooden top and held by a brad until the top has been firmly and evenly drawn over the padding and tacked securely about midway on the edge of the top.

Making the rattan braid.

The edges are then neatly trimmed, and a three strand braid of No. 2 rattan is made to cover the edge of the top and conceal the tacks which hold the woven top in place. One of the most difficult tasks is the splicing of this three strand braid so that it looks well finished. The braid should be securely tacked with wire brads No. 17.

Finishing the braid.

The two ends of the braid are brought together, with several inches to spare, and one end of the braid is woven or braided into the beginning of the braid, the strands in the end overlapping and exactly following the corresponding strands of the beginning.

The betwells.

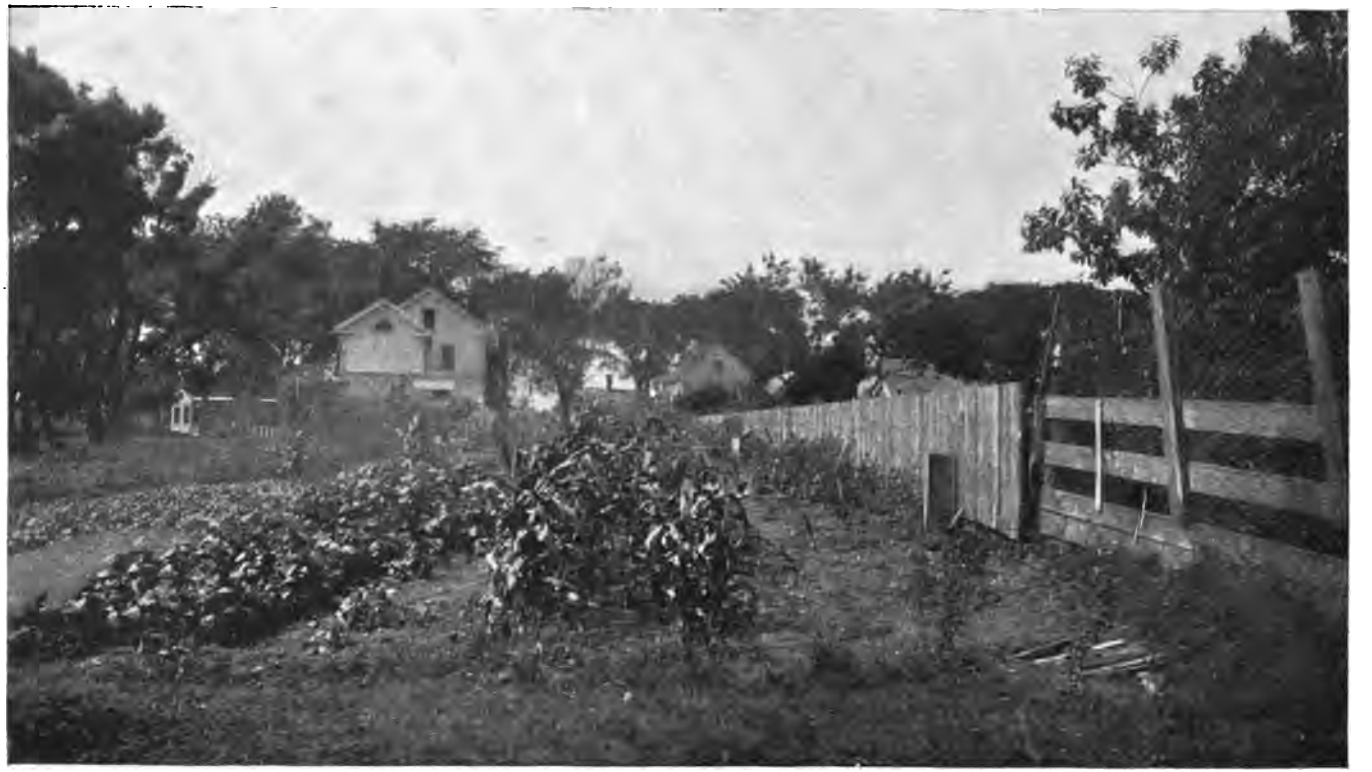
Wooden or rattan betwells may be purchased for a few cents, and these are glued to the dowels, after they have been fitted and the stool made plumb.

Finishing touches.

The footstool is now ready for the finishing touches. First a fine sandpaper is used over the entire stool, then it is carefully brushed, next singed, and lastly may be shellacked or stained.

The tabourette.

If the top is made a little smaller, the dowels considerably lengthened and the spokes and rattan finish made longer, a very satisfactory tabourette may be made by using these directions.



SCHOOL GARDEN.

CHAPTER XIV.

FIRST YEAR OF SCHOOL GARDEN WORK.

Seventeen boys and girls carried on our garden. Their ages ranged from twelve to fourteen years, so they were not only old enough to do most of the work and take a real and permanent interest in the garden, but also old enough to obtain good results.

Much of the work of the grade from April to July was based upon the garden. Measuring the garden and drawing to scale with examples connected with the work formed the basis for the arithmetic. New words used in talking about the garden made part of the spelling lessons, and watching the growth of the seeds and young seedlings supplied plenty of nature study. The germinating seeds in different stages suggested artistic water-color sketches, while the histories of the plants from the germinating seeds to the well-formed young seedlings were excellent subjects for written work,

Basis for other work.

We began early last spring to plan for the garden. A plot of ground one hundred and eighty feet by fifty feet was selected on the campus in front of the school buildings. The length of the garden extended about north and south, and it was separated from the main part of the campus on the west by a row of willow trees. The position was fairly good, the soil was a sandy loam of good quality, and the ground was nearly level except that it sloped somewhat toward the south. Water could easily be obtained from the underground pipes used in watering the campus. In March, horse-dressing was first spread over the ground and plowed in, then peat was added, and the whole harrowed. About the first of April the pupils began to work in the garden. From this time on, the work, depending upon the weather, the condition and the necessities of the garden, was carried on along two lines. The work out of doors on pleasant days consisted in preparing the ground, laying out the ground, weeding, thinning, transplanting, hoeing, and raking. The work in the schoolroom on cold and rainy days and when no immediate work in the garden was necessary, consisted of talks on the preparation of the garden, the selection of seeds, the condition of growth, the plan of the garden, the study of the germination of the various

Description of the garden.

Preparation of ground.

seeds, and writing a diary of what was done each day. The work indoors depended entirely upon the out-of-door work.

Tools needed.

The ordinary tools that we found the children needed were spades, forks, hoes, rakes, trowels, and a wheelbarrow. A surveyor's chain or some way of measuring the garden was also necessary.

Measuring the ground.

The first thing that the children did in the garden was to measure the ground so that they would know where to make the beds. With the surveyor's chain they measured the width at each end, finding that they were unequal, and the length of the garden. The children measured in groups, and the results varied so much after the first measurement that the work had to be repeated until the results were satisfactory. Then the larger boys pulled out the sods while the others leveled off the ground and raked it over.

Preparatory talks.

In the meantime, we had commenced the work indoors with talks on the garden. We considered what plants needed to make them grow, namely: Food, air, sunshine, and moisture. The sources of food supplies were discussed, and the different kinds of dressing, with the advantages of each. Sunshine and a certain amount of moisture were also considered necessary. One of the essentials in starting a good garden is good seed. The next question to decide was where and what kinds of seeds to buy. The children wrote letters asking for catalogues. The best letters were sent and a good supply of catalogues was obtained. The kind of seeds to be planted was soon decided, for we wished to plant during the first year only the most hardy seeds as peas, beans, corn, squash, radish, lettuce, beets, spinach, and cucumbers.

Sending for catalogues.

While the children were still preparing the ground, and before we could plant, it was necessary to make a general plan of the garden, so that we should not only plant the different seeds in the places best suited to their needs, but also that the plants should not shade one another. We wished to conceal on the east side of the garden a tall board fence extending the entire length, so we planned to have a row of sweet peas half the length and nasturtiums along the other half of the fence. As the east side of the garden was higher and drier, we decided to plant the early peas in two long rows the entire length of the garden just in front of the sweet peas and nasturtiums. Beside the peas we wished to plant something that came later and would not shade them, and so placed the corn here. Just in front of the corn came the beans. The next section was left for corn, squash, transplanted lettuce, and radish beds. Then the tomato plants extended the entire length of the garden. The last section next to the lawn was reserved for the cucumbers and squashes, with the sunniest corner for the onion, beet, spinach, and lettuce beds. Between the rows and beds, every-

GARDEN CLASS.

where, walks were left. This was our general plan as we discussed it with the children, and the one by which we planted. Later, each child drew to scale a plan of the garden. First, the outline was drawn, and then as each row of seeds was planted, it was indicated in its proper place on the plans. Plan made by children.

We were obliged to wait until nearly the last of April before the ground was in proper condition for planting. At last, on the twenty-third of April, the peas were soaked, and on the next day a long row was planted. This was followed by a second row. By this time, the lettuce bed was ready, and some of the seeds were hurried into the ground. The lettuce was planted several times, so that it should be ready for use at different times. On the seventh of May, we were encouraged by the appearance of the peas planted in the first row. The onion settings, spinach, beet, and radish seeds were soon planted. By the eighth of May the first lettuce had appeared, just breaking through the ground. It was fine weather then, and getting late, so that we had to hasten with the remaining seeds, and the beans, cucumbers, squash, and tomato seeds were soon in the ground. First planting.

While we were planting seeds we were studying in the house the early stages of the sprouting seeds. We studied the dry seed, the soaked seed, and then the very young seedling. We studied the pea first because it came up first in the garden, and by the time the peas were ready to thin in the garden we were ready to study them. After that we watched their growth in the garden. The history of the development of the radish, bean and corn were studied, and sketches were made in water-colors. By that time nearly all of the seedlings were up, and we watched their growth from day to day. One day we studied the lettuce bed. The class formed a line around the bed and noticed how tall the plants had grown, where the largest plants were, and when possible the best conditions for growth. In this way we studied the different beds as the seedlings grew large enough; the lettuce, the peas, the radish, the bush beans, and the cucumbers. The work indoors at this time consisted partly in keeping a record in diary form of what was seen out of doors. Here is a copy of one page from a child's diary:— Study of germination.

OUR RADISH BED.

June 11.

Our largest radishes are five and one half inches high. They have five leaves besides the seed-leaves. Our smallest radish plants are one inch high. They have four leaves besides the seed-leaves. The seed-leaves are shaped like a heart. The regular leaves are shaped like an oval. Where the radishes grow thickest the roots are cylindrical in form. Where the radishes grow thinnest the roots are spherical in form. Child's diary.

CONDITIONS FOR GOOD GROWTH.

Child's diary.

The plants need to have light, room, sunshine, air, protection, and food. One of the radish roots that was one and one quarter inches long was five eighths of an inch wide. Another that was one and one eighth inches long was one and one eighth inches wide. The plants came up May 7. They are thirty-four days old to-day. We are going to sell twelve bunches of radishes to the Normal School for sixty cents.

Hoeing and weeding.

Part of the time, at that period, had to be devoted to the weeding of the peas and lettuce, the hoeing of the corn and cucumbers, the thinning out of some of the other seedlings, and the transplanting of some of the lettuce. At the last of June the garden was in a promising condition. The peas had blossomed and the pods had begun to form, some of the lettuce and radishes had been pulled

PUPILS WEEDING.

and sold, and all of the seedlings were nicely started and the garden was free from weeds.

Care during summer.

During the summer, the garden was in the care of the principal of the school and the gardener, and the vegetables were picked as they ripened. When the children returned in the fall, the peas and most of the beans had been picked, although some beans had been left for seed, some of the lettuce was still in good condition, while some had gone to seed. While most of the radishes had been

pulled, part of them had been left for seed. The cucumbers and squashes were ripe, and the cucumber-vines had dried, although the squash-vines were still in blossom and bore squashes in all stages. The spinach and onions had been

PUPILS TRANSPLANTING.

pulled, but the corn and tomatoes were still freshly growing and needed picking from day to day. The beets were still fresh and green. During the summer turnips had been planted after the early peas were ripe, and these were growing well in September. Fall work.

The work in the fall was carried on by the same children, who had now become the eighth grade. The work naturally divided itself along two lines, the harvesting and preparation of the seeds for planting, and the studying of the fruits and vegetables. Seeds like the squash, cucumber, and tomato seeds were easily prepared. The ripe squashes were first gathered and taken into the house, then with a stout knife the squashes were opened, the seeds removed, washed, and spread out to dry. After a few days, when the seeds were thoroughly dry, they were rubbed apart, placed in a dish and labeled. While the radish seeds and some of the beans were shelled by hand, most of the beans were thrashed in a barrel. The corn was cut from the stalks and part of it husked, while the husks on some of the ears were left and braided together for hanging Harvesting. Saving seeds.

up. As the fruit was gathered, the plants were pulled and piled together, and so the garden was gradually cleared up. The beets and the turnips were the last gathered, just before the first frost.

Study of fruits.

In the meantime, on certain days of the week, the fruits were studied in connection with the entire plant. These are some of the topics considered,—the entire plant; the growth and conditions for growth; size of large vines; the flowers; time of appearance and color; the fruit, arrangement; development from the flower; shape, size, color, surface, and uses.

Banking profits.

During the season many of the vegetables had been sold, and thirty-one dollars had been realized. For safe keeping this was deposited in the Hyannis bank. One afternoon the entire class made a trip to the bank and each child learned how to deposit money by making out a slip. The class now has a bank and a check book to its credit.

Expenditures.

Since the proper use of money is quite as important as the earning of it, the spending of the money needed careful consideration. It was decided to let the class use some of it for a good time. During one lesson the class took the form of an informal meeting, elected a chairman, and decided upon the general arrangements. After much discussion, it was voted that each child might invite one friend, and that refreshments, which were not to exceed in expense five dollars, should be served. A committee of three of the girls was elected to arrange for the refreshments and entertainment, together with one of the teachers. The class also voted to invite several of the teachers who had helped them with the garden. The invitations were written in due form as a class exercise, and sent. As a result forty children spent a happy evening playing games in the school gymnasium. The rest of the money will probably be put to a more practical purpose. The class voted to spend some of the money to buy twine for making hammocks, and at present the children are at work on the hammocks. In spending money, they are taught how to make out correctly all the bills, checks, receipts, and other papers used in the handling of money.

Garden class party.

If caring for a garden arouses an interest and a love for growing plants, and imparts knowledge enough to start a home garden, much good has been done.

SECOND GRADE GARDEN — TYPICAL FLOWER BED.

CHAPTER XV.

SECOND YEAR OF SCHOOL GARDEN WORK.

This is the second year that we have had a school garden in connection with the training school. Last year the seventh grade children, seventeen boys and girls, had a vegetable garden. The work of the garden extended through the spring and autumn, and an account of this garden may be found in a preceding chapter. This spring we enlarged the garden, and the children of three grades, the eighth, the fourth, and the second grades, sixty-eight in all, are working in the garden.

The spring work connected with the garden of the eighth grade naturally depends upon the actual work of the garden, and may be divided into the following parts: 1. The study of soils. 2. Lessons on the preparation of the garden. 3. The preparation of the garden. 4. The selection of seeds. 5. The plan of the garden. 6. Laying out the garden. 7. Planting the seed. 8. Study of the germination of some of the seeds. 9. Care of the young seedlings and the garden. 10. The study of the young seedlings and plants in the garden. Some of the regular lessons in the other subjects—as drawing, language, and arithmetic—are correlated throughout with the garden study.

Kinds of work.

An examination of the various kinds of soils available for gardens makes a

natural introduction, in this grade, to the work in the early spring. The various ways in which soils are formed and the agencies at work in their formation may be seen at any time. Since the fertility of the soil depends as well on the texture and the amount of moisture contained as upon the actual amount of plant food, the physical characteristics of the soil need to be studied. All the study of soils should lead to the recognition and a better understanding of good garden soil and some of its prominent characteristics, such as the following: 1. It must be quick to work; must not contain too much clay. 2. It must be rich; contain plenty of available plant food. 3. It must be easy to keep in good tilth; free from rocks, stumps, etc. 4. It must respond quickly to fertilizing materials. If the garden soil is not ideal in every way it may be improved, and a lack of plant food is easy to remedy by adding fertilizers.

Study of soil.

With the older children who know something about gardening, it is well to talk over the different ways of preparing the ground before the actual work is done in the garden. Some of the questions that arise may, if necessary, wait for answers until after the actual work in the garden. The gardener plowed the garden, carted the dressing, which was a mixture of horse and cow manure, spread the dressing, and harrowed the garden. The children watched the plowing and harrowing. They noticed how the gardener handled the plow, where he began to plow, and how he went back and forth the length of the garden, what the plow did to the land, and the parts of the plow with their uses. They found the depth of the furrows. The children also sketched the plow, and calculated the amount of dressing used on the garden. After the garden had been plowed, fertilized, and harrowed, the children raked it.

Preparation of ground.

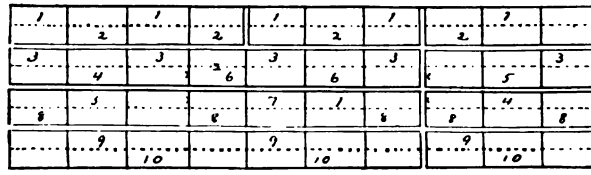
In the schoolroom, in the meantime, the kinds of seeds had been discussed and a few selected for planting. The seeds of radish, lettuce, peas, beans, beet, cucumber, corn, with onion sets, potatoes, and tomato plants were chosen. These were selected because they were hardy and would grow well. Some were selected for early and some for late planting. Some, as peas, radishes, etc., illustrate planting in drills; others, as cucumbers and corn, in hills; while others, as tomatoes and potatoes, give practice in handling young plants. Each child had four kinds of plants, and each kind illustrated a different method of planting or cultivation.

Discussion of kinds of seeds to plant.

The plan of the garden depends upon two features. First, we wished the garden, when the plants were well grown, to appear as one garden, like any farmer's well kept garden, and not like a collection of eighteen small gardens. Secondly, we wished each child to have a plot of his own. The following diagram shows how the two ideas have been carried out, and the illustration will

show the unity of the garden in the rows of peas, onions, potatoes, etc. Each child has a plot eighteen by twenty-five feet, and his area of potatoes and cucumbers continues with his neighbor's potatoes and cucumbers on either side of him. So that potatoes extend the entire length of the garden, as well as the corn, cucumbers, tomatoes, and beans. Garden plan

The garden is the basis for true nature study. A garden is a resort for sparrows, gold finches, purple finches, yellow warblers, and other birds. The



PLAN OF THE EIGHTH GRADE GARDEN.

1. Tomatoes. 2. Corn. 3. Peas. 4. Radish. 5. Lettuce. 6. Onions. 7. Beets. 8. Beans. 9. Potatoes. 10. Cucumbers.

earthworm, toad, tent caterpillar, June beetle, potato bug and cucumber beetle will sooner or later be met, and should be studied, for we need to know whether they are friends or foes. The development of the plants themselves is interesting, and we wish to see what becomes of the seed leaves, the new leaves, the effect of sunlight on the plants, and the effect of rain on the appearance of the whole garden. Garden basis for nature study.

The entire garden covers 16,680 square feet, and about half of this is cultivated by the fourth grade and under cultivation for the first time for many years, and is therefore hard to handle.

The fourth grade is divided into seven groups of three children each, and each group has a plot planted with three different kinds of vegetables. These children have also raked their garden, laid it out, planted the seed, and cared for the young plants. They had a special lesson when each kind of seed was planted. The process of planting the peas will illustrate one way of planting. 1. Mark the drill with stakes and string stretched from stake to stake. 2. Dig the drill with a hoe. 3. Lay the peas about an inch apart each way. 4. Cover the peas by hoeing the soil over them. 5. Press the soil firmly with the back of the hoe. 6. Label the drill with two labels marked with the name of the seed and date on one side, and the name of the planter on the other. Place one label at the beginning of the planting and one at the end. Work of fourth grade. Process of planting.

Each child has kept a diary containing a record of the work done in the garden. A page from a diary of a fourth-grade child will show how this is kept: "May 22. This afternoon Mr. Murray showed us how to plant melons. First he dug a large round hole and almost filled it with dressing. Then he mixed the earth with the dressing. Then he sprinkled about ten or twelve seeds on each hill and covered them with about an inch of soil. Then he patted it down with the hoe and built a little ridge around the hill so the water would not run off when the hill was watered. We planted ten hills."

Fourth grade diary.

The children of the second grade have a flower garden. The children of the fourth and second grades have studied the various operations of the garden, although in a simpler way than the children of the eighth grade. The younger children were taught how to do the planting, weeding, etc., in the garden, and afterwards had the talks in the schoolroom. Each child of the second grade has a plot seven by eight feet, and has planted four packages of flower seeds.

Flower garden of second grade.

The work with the younger children has been quite different from that with the older children, and needs to be much more carefully planned. The general

SECOND GRADE GARDEN — COSMOS.

plan of the garden should be simple, so that the children may lay it out and draw a plan of it. The plots and the paths should be of a size that may be easily measured by the foot rule and the yardstick, and easily reduced to drawing on paper. There should be plenty of room for the children to walk about, and each plot should be narrow enough for the child to easily reach all parts of it.

Simple plan.

Of course only the most hardy flower seeds and those most easily grown and cared for should be selected.

We discovered that the children did not know the flowers by names, and so the garden was planned by colors, and the children were allowed to choose the color of the flowers which they would like to plant. Color scheme.

The garden is rectangular in shape, and is divided by paths running lengthwise and across into twenty-eight rectangles arranged in two rows. The seeds of orange-colored flowers were planted in two plots at one of the extreme ends, then came four beds planted with seeds of yellow flowers, then four of white, six of scarlet, two of white, four of pink, four of blue and two of purple flower seeds. The main object was to plant the seeds so that the colors should not clash, and, if possible, should blend one with another. The orange-colored flowers are, marigolds, Prince of Orange, orange ball, dwarf nasturtiums, eschscholtzia or California poppy. The yellow flowers are, marigolds, African double, El Dorado favorite, lemon yellow eschscholtzia or California poppy, calliopsis, gaillardia, sweet sultan, yellow stocks, and canary yellow. The white flowers are, mignonette, zinnia, candytuft, sweet alyssum, lobelia, ageratum, aster, centaurea marguerite, phlox Drummondii, poppy and verbena. The scarlet flowers are, zinnia, poppy, stock, gaillardia, aster, phlox Drummondii, salvia, and verbena. The pink flowers are, phlox, pinks, single aster, marguerite carnations, zinnia, poppy, verbena, Chinese pinks and petunia. The blue flowers are, verbena, bachelor's buttons, ageratum, lobelia, phlox, aster, petunia, stock, verbena. The purple flowers are, petunia, stock, larkspur, aster, and zinnia.

The care of the young plants, the watering, weeding, transplanting, thinning, and hoeing have begun and will continue during the summer by the children and the students of the summer school. The harvesting and selling of the vegetables have also begun; the radishes, lettuce, and peas form the early crop, and the plots devoted to them will be planted with turnip seed for the later crop. Double crops.

The work in the autumn will consist in harvesting the crops of corn, tomatoes, potatoes, gathering and preparing seed for the spring as well as studying the autumn fruits.

One can hardly obtain an idea of the interest that the children have taken in the garden from a description, or even from photographs, without actually seeing the children at work in the garden. In the eighth grade, although each child may do something different, he knows exactly what he is to do, and goes to work with a will. They are always on the alert to find something new in the garden. The children in the second grade need more careful supervision, but Interest of children.

Attitude of different grades.

are always busy. They seem to take a more vital interest even than the older children. Some of the children of the fourth grade seem less devoted than the others. This may be due to several causes. It may be because they work in groups instead of singly or it may be due to the fact that the class contains a few pupils who are naturally disinclined to work of any kind. But even these children think it a hardship if they are deprived of the privilege of working in the garden.

LAYING OUT THE GARDEN.

CHAPTER XVI.

CORRELATION OF SCHOOL GARDEN WITH OTHER SUBJECTS.

The garden, which has been the most important phase of our industrial work in the spring, has formed the basis of much of the regular school work. The following is a plan of the work for the second and fourth grades, with some typical lessons showing the correlation with the number and language work.

General Plan—1. Preparation of the ground. 2. Talks on the preparation of the ground. 3. Laying out the garden. 4. Plan of the garden. 5. Selecting the seeds. 6. Planting the seeds. 7. Talks on planting the seeds. 8. Study of the germination of various seeds. 9. Study of the condition of growth. 10. Care of the seedlings in the bed. Plan of work.

What they saw and did in the garden and their reasons for doing it gave material for many indoor talks in the language period. The work of the second grade began April 11, when the pupils watched the gardener plow, fertilize,

and harrow the garden. They compared the unbroken land with the plowed and with the harrowed land. They named the parts of the plow and harrow, and discovered their uses. Attention was called to the way in which the gardener plowed, the effect of plowing, the depth of the furrow, the harrowing, and the necessity of mixing the fertilizer (plant food) with the soil. Some of the time given to the written language was spent in writing an account of their work in diaries. The following is a quotation from one of them:—

Observation and language.

"April 11. We watched Mr. Murray plow our garden to-day. The horse drew the plow and Mr. Murray held the handles. The plow turns the earth over. Mr. Murray began to plow in the middle of the garden. He named the parts of the plow. They are the handle, the knife, the molding board, the shoe, the toe, the landside, and the beam. Frank found some earthworms. We left them in the garden for they help us. They soften the ground. We are going to plant flower seeds in our garden.

Child's diary.

"April 12. Mr. Robinson harrowed our garden to make the earth fine and soft. The harrow mixed the dressing with the earth. The dressing is food for the plant. The harrow has three sides. On one side there are five iron teeth. On the other sides there are six teeth. The big stone kept the harrow down."

The new words that came up in the language lessons were written on the board and used in spelling lessons.

Another phase of the language work was the oral and written reproduction of stories told about the farmer, his friends and his enemies, seeds, flowers, and gardens. The children's reproduction was sometimes rearranged by the teacher and written upon the board or printed on leaflets for the reading lessons.

After the talks on the preparation of the soil, the children were told such stories as "The Farmer and the Birds," "The Little Worm that Was Glad to be Alive," in Emilie Poulsson's "In the Child's World"; "Carl and the Earthworm," in Wiltse's "Kindergarten Stories"; "The Contented Earthworm," in "Among the Meadow People." Some of Celia Thaxter's stories and poems on seeds, flowers, and her garden at Appledore were used. They are full of life and love for all growing things, and helped the children to enter into the spirit of planting and caring for their seeds. After planting some special kinds of seeds, stories were read like "Clytie" in Flora Cook's "Nature Myths," "The Story of the Morning Glory Seed" in "In the Child's World," "Amy's Garden" in Wiltse's stories, "Ten Peas in a Pod" in "Boston Collection of Kindergarten Stories." Stories like "What They Did" in "In the Child's World," and "Blind Florette" and "The Flower Cluster" in Sheldon's Fourth Reader, helped to

Use of stories.

awaken a desire to give pleasure to others through their flowers. The children especially enjoyed "Peggy's Garden, and What Grew Therein," by Celia Thaxter. It furnished material for many language and reading lessons.

The number work for nearly a month was based upon the preparation of the ground, the laying out of the garden, the making of the plan, and the planting of the seeds. The tables of twos, fours, sixes, sevens, eights, and tens were taught. Lessons on finding the area and perimeter of the beds and paths were given. The fractions one half, one fourth, and one eighth were taught and used in making the plan of the garden. (Scale, one eighth of an inch equals one foot.) The class went into the garden and were told that each child was to have a garden of his own. They were then anxious to begin work in their own plots. It was easy then to show the necessity of laying out the garden. In measuring the garden the surveyor's chain was used. As the children had never seen one, a lesson on measuring with the chain was given in the schoolroom. They were led to discover that the chain is made up of fifty links, each one foot long; that it is divided by counters into five parts, each ten feet long; that the first counter marking the first ten has one point, the second two points, and so on. They counted by tens and wrote the table of tens upon the board, and in the number books for future use. The chain was stretched on the floor and the children were asked to walk twenty feet, twenty-four feet, thirty-five feet, forty-nine feet, and tell how they counted. They measured the length and width of the schoolroom floor and of the hall floor with the chain, two children working together. They soon learned to work independently.

Number work.

Surveyor's chain.

The fourth grade pupils marked the four corners of the second grade garden while laying out their own. The second grade found their corners, and proceeded to measure the length and width of the garden. When measuring, the children worked in groups of four, two with the chain, one with the mallet, and one with the stakes.

Marking off garden.

In the number lessons given the first of May, the children calculated the number of laths and stakes needed for marking off the beds. They found that two two-foot stakes could be sawed from one four-foot lath; that two laths were needed for one bed, four for two, and so on. The table of twos was written and copied. Each child needed four stakes for one bed. Eight were needed for two, twelve for three. With the definite aim in mind to find the number of stakes needed in the garden, the children counted by fours to 112. The table of fours from one four to ten fours was written and copied. The stakes were sawed by the fourth grade pupils.

Number tables.

The children decided to lay out the twenty-eight beds in two rows. They

were told that each bed should be eight feet long and seven feet wide. The long paths and the strips for the two rows were marked off on the sides, AB, CD, Fig. 1. The cord was then stretched from A to C, 1 to 3, 2 to 4, and

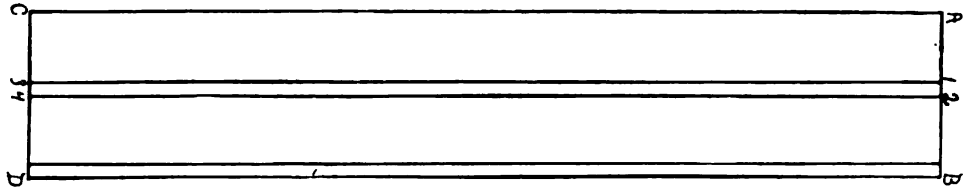


FIG. I.

Arrangement of beds.

B to D. The short paths and beds were then marked off. One end of the chain was fastened to corner A, Fig. 2, and stretched along the line AB. Stakes were driven along this line, marking off two feet for the paths and seven for the beds. The side CD was then marked off in the same way, and the cord

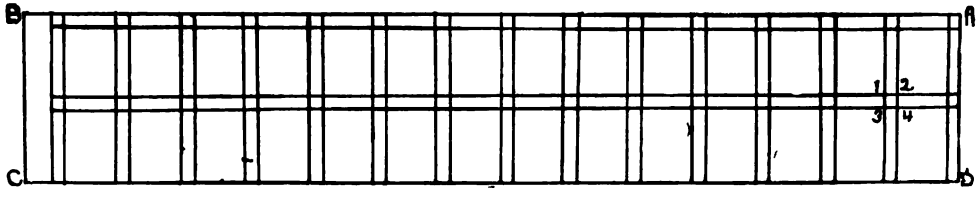


FIG. II.

stretched. Stakes were driven at 1, 2, 3, 4, and so on, to mark the beds. The children then went into the schoolroom and wrote in their diaries. One child wrote the following: "We measured our garden with the chain. It is 128 feet long and twenty feet wide. We marked our beds by putting laths at every corner. The paths are two feet wide. Each bed is eight feet long and seven feet wide."

Plan of bed

The number class estimated and measured the amount of cord needed to stretch across one bed. Each child drew a plan of his bed on the board. (Scale, one inch equals one foot, Fig. 3.) He found the perimeter of his bed and the amount of cord needed, in feet and yards. They decided that eight inches of cord were needed for twisting around one stake, sixteen for two stakes, and so on. A part of the table of eights was written. Statements like the following were written in the diaries: "This morning I measured eleven yards of cord for my bed. This afternoon I stretched the cord around the bed. We took up the cord we stretched yesterday."

The children decided to plant their flower seeds in rows. The following is a number lesson in which the children estimated the amount of cord and the number of stakes needed for marking off the rows. Each child drew a plan of

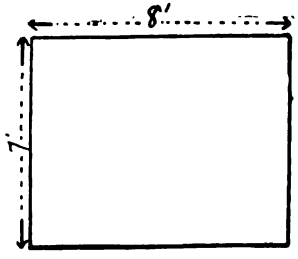


FIG. III.

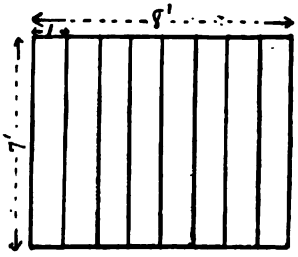


FIG. IV.

his bed and the seven rows on the board. (Scale, one inch equals one foot, Fig. 4.) He found the number needed for one row and the number for seven rows, counting by twos. He found that two yards and one foot of cord was needed for marking one row, and sixteen yards and one foot for seven rows. The amount of cord allowed for twisting and tying was then added. The cord was measured and wound for the afternoon's work. He wrote a record of this work in the diary like the following: "I measured off eighteen yards of cord for my rows this morning. This afternoon I marked the rows with the stakes and cord. I used two stakes for one row and fourteen for seven rows. The rows are one foot apart." Number lesson.

The illustration shows the beds as they looked after the rows were marked. After working in the garden, talking about their experiences, and hearing about Peggy's garden, the children made stories like the following: "Peggy's Garden. This story is about a little girl. Her name was Peggy. Peggy lived by the sea. She was a thoughtful little girl. She was kind to others. Peggy always helped her mother. She had a little brother. His name was Willie. Willie loved Peggy. Willie and Peggy went to walk by the sea. When spring came Peggy had a garden. She planted flowers in her garden. Willie helped water the garden. Soon the seeds came up. Peggy had to weed her garden. The flowers grew very fast. They were pretty and so sweet." Collections of these and similar stories were made into little books for the children in the second grade to take home. Language lesson.

In the number lessons the pupils answered many of the questions by measuring and counting. At the close of each lesson the addition and multiplication tables were written on the board and copied. The number facts used were

reviewed by a short drill. Throughout the work each child had a motive of his own for doing the work, and was anxious to know the results.

New interest.

Connecting the garden work so closely with the regular school work brought more life and enthusiasm into the schoolroom. The children were anxious to estimate and measure correctly, for they saw, in the garden, the immediate results of their work. They were eager to talk, for they had something to say, and to write, because they had something to write about. Peggy and the children in the garden stories lived for them, for they, too, were making a garden.

FOURTH GRADE GARDEN — FIRST SUMMER SQUASHES.

CHAPTER XVII.

SOME ADVANTAGES OF SCHOOL GARDENS AND SUGGESTIONS REGARDING THEM.

As has been stated in a previous chapter, the eighth grade children each had a vegetable garden about 18 x 25 feet and sold the products for the benefit of the class fund. The fourth grade class raised vegetables, working in groups of three or four and having two or three plots for the whole class. They sold only about enough to pay for their seeds and took the rest home. The second grade children each had a flower bed 8 x 7 feet and either took the flowers home or gave them away.

I wish that time and space would allow me to tell you some of the stories connected with this garden work—of a neighbor's hens which would get out and come over and scratch just at inopportune times, of the opportunities for moral lessons where the children had a very personal interest and were the aggrieved parties. I am quite sure you would be interested in some of the reports taken by our shorthand reporter on the garden talks of the children after their vacation, and in some of the letters which our children have written to and received from the children in the Training School of the Willimantic Normal School. I shall not, however, take the space for these things, but will

instead state very briefly some of the advantages which the children seem to be gaining from this work, and offer a few suggestions which may possibly prove helpful to beginners in the school garden work.

Advantages of Work in School Gardens.

1. Takes children out of doors; therefore tends to break up machine-like routine of school work.
2. Gives children something to do.
3. Gives children an opportunity to plan for themselves.
4. Gives children an opportunity to raise vegetables of value in the market, therefore connects the child with the world and gives him a feeling of personal power, which is a good foundation for self-respect.
5. Helps the child to see the life history of several plants.
6. Helps the child to see the relation of plant life to soil, sun and rain, with many variations.
7. Helps the child to see the relation of plant life to animal life as to the life of insects, birds, man, and so to understand the dependence of man on vegetable and animal life.
8. Helps the child to see ways in which man works with nature to modify and improve vegetable life.
9. Enriches the mind of the child in these many ways so that he expresses himself through drawing, number, language, and gains by reading geography and history many things translated by his garden experiments.
10. Cultivates a respect for the rights of others.
11. Cultivates a respect for the property of others.
12. Cultivates a respect for the labor of others.
13. Cultivates a feeling of kinship with laborers of all kinds.
14. Helps to make the school life more natural and to connect it with the home life and the life of the world.
15. It broadens and enriches the whole future life of the child.

Suggestions for School Gardens.

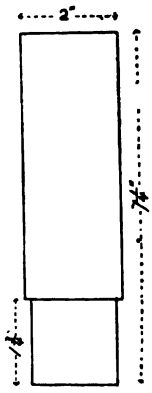
1. Have some kind of a garden for at least two of the nine grades.
2. Commence as you can. Do not wait until everything is to your mind. The way will open up as you go.
3. Read up on the subject and be encouraged.
4. Pay as you go.

5. Show that you can be independent. When you have shown your power to go alone, aid will come to you.
6. Make very careful plans for your garden early in March.
7. Encourage the children of the upper grades to write for seed catalogues.
8. Study these catalogues with the children, and let them tell all they may have learned at home about gardening.
9. Let the children of all grades have a part in deciding what they are themselves to plant, and in all similar questions.
10. Have the children measure and make a plan of the whole garden.
11. Plant mostly common vegetables which the fathers and mothers will recognize as worth while. Radishes and lettuce are favorites, as they are ready for use so quickly.
12. At first make much of the practical aspect of gardening.
13. If possible, consult a good gardener often.
14. Observe those people who are struggling for a livelihood; study their experiences and be guided by their successes.
15. Let the work be just as natural as possible.
16. Do not spend much time on artificial experiments, such as cultivating tropical plants, planting beans in different kinds of soils, and the like. This is college work. Children in the grades need to learn about things as they naturally grow, not to import an artificial or foreign environment.
17. Be quite satisfied if the children are getting what seem to you but commonplace ideas, so long as the work is perfectly natural and is furnishing a basis for other work in school.
18. Make the best of every little incident which may come up, turning what look like disturbing elements into helpful ones.
19. Be ever hopeful and patient, but persistent, and all will come right.
20. Have definite aims and work toward them.
21. Let the school garden be a starting point for many expeditions to other gardens, to parks, and to the country.
22. School garden work is especially appropriate for agricultural communities, but may be given to advantage in most cities.

CHAPTER XVIII.

HAMMOCK-MAKING.

Among the industries well adapted to children in school, hammock-making takes a high place. This was selected for the eighth grade. After the children had gathered the harvest and made everything trim and snug for the winter, they had $30 to their credit in the Hyannis bank. We immediately sought for something for them to do during the winter, and found that hammock-making was well adapted to them. They voted to spend part of their money for the twine and other necessities.



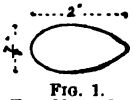


FIG. 1.
THE MESH PIN.

The materials required for making a hammock are twine, rings, and tools consisting of a needle, mesh pin, and stick. The twine that we use is fish net twine. We obtain No. 28 thread, soft twine in large bundles. The skeins are separated and each one is wound in a large ball from which the twine is used for winding the needle. The rings are ordinary galvanized malleable rings, two inches in diameter, and two are needed for each hammock. Materials used.

The stick is simply a smooth round stick about twelve inches long and about one inch in diameter. A piece a foot long sawed from a broom handle is just the thing.

The hammocks that we have made are very long, about ten feet in length, and very full and wide. The size of the mesh is four inches. Both the size of the mesh and of the hammock may vary, but they depend upon the size of the pin and needle. The needle must not be broader than the pin, and the mesh is just twice the circumference of the pin. The pin and needle may be whittled out of wood, or, if carpenters' tools are available, may be worked out in better shape according to the accompanying diagrams. The mesh pin is somewhat more difficult to make than the stick. It is made of wood, either pine or oak, of seven-eighths inch stock. Select a good, clear piece and cut out a block seven and one fourth inches long and two inches wide. On both ends mark out an oval as indicated in the plan, Fig. 1. Then place the block in the Size of hammock.

vise or clamp and plane it the entire length to the marks. Make a curved line around the pin one and three fourths inches from one end. With a saw make a cut along this line three thirty-seconds of an inch deep and remove with a wood file the layer of wood three thirty-seconds of an inch thick around the block from the curved line to the shorter end. The mesh pin may be left in the natural state or finished by smoothing down with sandpaper and then oiled or shellacked.

Making mesh pin.

The needle is the most difficult tool to make, and requires some time and skill. Care should be taken in selecting the wood to have it tough, close-grained, and free from imperfections. We have found hickory, rock maple, and lignum-vitæ adapted to this purpose. To make the needle, select a good, fine-grained stick three sixteenths of an inch thick, and saw out a piece thirteen and one fourth inches long and one and nine sixteenths inches wide. On one side mark out the needle according to the accompanying diagram, Fig. 2. The fork, F, is made by cutting out a large rectangular piece with a bit and saw. At the base of the fork make with a three eighths inch bit three borings tangent to each other, to the base of the fork and to the side lines. The holes should not be bored entirely through from one side, but only half way, then the wood turned and finished on the other side. The needle should be held horizontally in a vise to prevent the wood from splitting. With a rip saw cut along the two lines A and B, and the large piece will drop out of the end, making the fork. In shaping the point, P, of the needle, saw along the two inclined lines C and D and file off the corners. To cut out the eye, E, of the needle, make twelve tangent borings with a three eighths inch bit, and remove the pieces of wood. The irregularities may be filed away. All the corners and sharp edges should be smoothed away and the whole needle sandpapered.

Making needle.

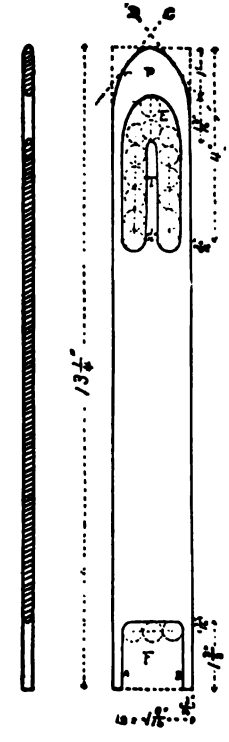


FIG. 2. THE NEEDLE. F, the fork; P, the point; E, the eye; T, the tongue.

Winding the Needle—The needle should be wound as closely and compactly as possible in order to carry a great deal of twine. After one needleful is used, the needle is wound again and the ends of the twine tied with a double knot as indicated in a following paragraph. To wind the needle, hold it in the left hand and the twine in the right. Make a loop over the tongue on the needle and bring the twine down to the fork. With a motion of the left hand turn the needle over towards the right and then bring the twine up from the fork on the

MAKING HAMMOCKS.

other side of the needle. Take another loop over the tongue, carry the twine down to the fork, turn the needle, carry the twine up on the other side, take a loop over the tongue, and repeat until the needle is full. Then cut the cord. Care should be taken to wind the needle evenly, piling up the cord way across the fork and not only in one place. **Winding needle.**

Starting the Hammock—When the needle is finished and wound, and the pin is made, one is ready to begin making the hammock. To make the first mesh, wind the twine twice around the pin and tie in a square knot. Slip this off the pin and the first mesh is made. **Making the first mesh.**

Tying ninety mesh knots is the next step. The first mesh should be slipped over some knob to hold it while working. Hold the pin in the left hand with the fingers on the upper side and the thumb underneath with the pointed edge of the pin away from you. The needle is worked in the right hand. With the mesh over the knob, bring the twine over and around the pin, Fig. 3, A, and put the needle up through the first mesh, Fig. 3, B. Be sure that the square knot, Fig. 3, C, is midway between the knob and the pin. Pull the twine until the first mesh, Fig. 3, B, comes against the edge of the pin and hold the twine firmly against the pin with the forefinger. To tie the knot leave the twine beyond the forefinger loose in a loop, Fig. 3, D, that hangs down over the back of the left hand, and put the needle up between the two coils of the first mesh and the twine that is around the pin, thus passing through the loose loop, Fig. 3, E. Pull the needle and the twine on it gradually, lifting the forefinger as the knot tightens. Slip the knot off the pin and the second mesh is made. Bring the twine over the pin and proceed as before to tie the second mesh knot. In this way tie ninety mesh knots, taking care to pull each knot tight and to keep the meshes all the same size. The boy at the right in the picture is tying the ninety knots.

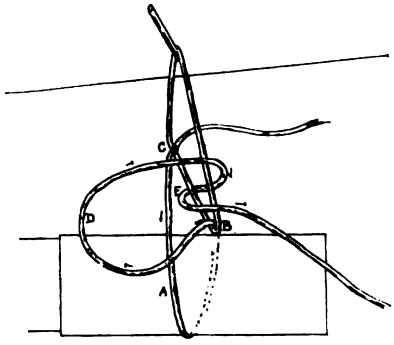


FIG. 3. TYING A MESH KNOT.

Putting the Meshes on the Stick—When ninety knots have been tied the hammock is ready to go on the stick. Slip the ninetieth mesh over the stick first, then the eighty-eighth mesh, the eighty-sixth, the eighty-fourth, and every alternate mesh to the beginning. Then there will be forty-five loops on the stick and the knots will be arranged in two rows with forty-five knots in each row and **Second step.**

the twine at the left end. These are the first two rows of knots of the hammock, and should look like the hammock that the boy at the right is holding up.

The first third of the hammock.

The stick should be held firmly in some place, as between the window sill and the sash. Then tie thirteen more rows of knots, making fifteen rows in all, or one third of the hammock. Always work from the left to the right, and, when the end of a row is reached, turn the stick over to bring the twine at the left side again.

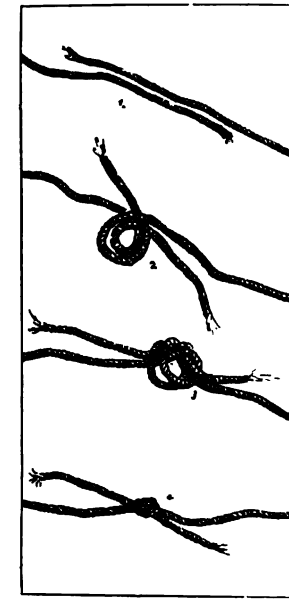


Fig. 4. The Double Knot.

Uniting two ends of twine.

Joining the Twine—When all the twine wound the first time on the needle has been used, the needle must be wound again and the ends tied with a double knot, so that they will not slip. The double knot is tied as in Fig. 4. One end is placed beside the other so that the long and short ends shall in each case be together, Fig. 4, 1. Then tie a simple knot, putting the needle and a short end up through the loop, Fig. 4, 3. Pull the knot hard, pulling each end separately, Fig. 4.

Middle third.

The Middle Third of the Hammock—The next fifteen rows are made somewhat different to allow for the bagging of the hammock. The three meshes at each end of a row are made slightly smaller by tying the knots over the small end of the pin. The other meshes are made over the large end, as in the first fifteen rows.

Last third.

The last third of the hammock is made by tying fifteen rows of knots of the large size as in the first third of the hammock. Care should be taken to keep the rows of knots straight across and the meshes of the same size.

Putting on ends.

Putting on the Ends—When the hammock is ready for the rings, tie a ring to some support, as the back of a chair, and place it about two feet from the end of the hammock. Put the needle bearing the twine up through the ring, then through the first mesh and tie a mesh knot. Pass the needle again up through the ring and then up through the second and third meshes and tie them together with a mesh knot. Once more pass the needle up through the ring and then up through the fourth, fifth, and sixth meshes and tie them together with a mesh knot. In this way go across the width of the hammock, tying alternately two and three meshes together, making a long loop into the ring after each knot. Then gather all the long strings close to the ring into the left hand and wind the twine firmly around them about twenty-four times. Cut the twine and pull

the end under a few of the last windings. Make the other end like the first, and the hammock is ready for use.

The different steps may be summed up as follows:—

Preparatory—Obtaining twine and rings; making stick, pin, and needle; winding the needle.

Making the Hammock—Starting by tying a square knot; tying ninety mesh knots; putting on the stick; tying thirteen more rows of mesh knots, making fifteen in all; joining twine with a double knot when necessary; tying fifteen rows of knots having three meshes at each end smaller; tying fifteen rows of large size meshes; putting on the ends. Summary

Each of the nineteen children in the eighth grade made one hammock for himself and one hammock for the class. A few have made a third one.

CHAPTER XIX.

SEWING.

One of the lines of industrial work which comes close to the life of the girl in the home is sewing. No one doubts that it is practical for a girl to be taught to sew. The question seems to be, will she be able to do the common, everyday sewing in the home after she has pursued the school course? Not long ago a girl who had taken a course of sewing in school was asked to mend the sleeve of her dress. Her first thought was that she must have a square hole, because that was the way in which she had been taught. Therefore, she cut away the cloth until half of the sleeve was gone and the dress ruined. Whereupon the mother was exceedingly displeased and, naturally, dissatisfied with the school course. Nor does it seem unreasonable for a mother to expect that the child shall be able to make practical application of what she has been taught at school.

Aim.

It has been our aim in teaching sewing to have it connect closely with that of the home. We have tried to get at it in a natural way so that there might be as much spontaneity as possible.

Starting the work.

In the class there are eighteen girls of the seventh and ninth grades. Those of the ninth had received some instruction in sewing last year, but the others had not. In the beginning, it was somewhat difficult to know what should be taken first. I found, however, that new towels and coffee bags were needed in the dormitory, and planned to use these as a beginning. The class were to receive for the work what any woman would be paid for the same. Accordingly each girl cut off a piece of toweling to hem. Those who knew about it went to work without help. The others made an attempt, and as soon as they found that they needed to know how, were shown the right way. The beginners naturally took the most interest in the towels. It was found necessary, at this point, to change the work for the others, so that as soon as a towel was nicely finished, the pupil was allowed to cut out a coffee bag. This was a step in advance, as it called for the use of some other stitches. Our plan has been for the girls to get all the stitches used in ordinary sewing, but to get them as they needed to use them in making something useful, not by just "sewing stitches" as the children say.

Sewing something which was needed.

Some of the towels have, since the beginning of the garden work, been sold to the eighth grade, and in this way we have been able to connect our work with the work of another grade of the school.

Girls furnished tools.

The girls brought their needles, thimbles, scissors, etc., from home, some of them carrying them back and forth each time. Soon it seemed necessary to have a work-bag. They were consulted about it, and seemed to think it a happy idea. They decided about the color and kind of material. Each girl brought her own, many choosing plain colors, such as pale green, pale yellow, and old blue in some durable wash material. I never, for a moment, doubted the advisability of the work-bags. To say that the girls were interested is putting it mildly. Those who had not finished the other things hurried so that they, too, might make their bags, for we made it a rule that we must finish one thing before starting another. The whole secret of such success as we have had was due to the fact that they were making something which they needed and desired to make.

Work-bag needed and made.

Freedom in choosing article to be made.

After this the girls were allowed much freedom in choosing what they desired to make, and those who wished made dainty lawn ties, hemstitching the ends, and finishing the sides with the French hem. Others made kitchen aprons for themselves, and one girl partly made a skirt. About this time they were beginning to bring in things without my suggesting them, thus showing an increased interest in the work. One girl, the youngest in the class, asked if she might make something for somebody besides herself, and when told that she might, spent many days making an apron for her grandmother. Has not sewing meant something more than stitches to her?

Kind of garments made.

At the present time we are working on shirt waists, undergarments, and the like. Most of them have been cut out at home, but it is far better to have the girls do that, too, and, in that way, learn how to use the paper patterns so common nowadays. In making the garments, they have basted them and, after having them fitted, have stitched them on the machine in the dormitory. We count the machine stitching valuable, because of its practicability. Let it be understood that the children are required to have some proficiency in sewing by hand before they are allowed to use the machine. They have been intensely interested in this part of the work, because they have been making something which they needed and could wear.

Mending.

Our work has not been entirely confined to making things. We have done some mending, too. Articles which had been worn and were in need of repair were brought from home and made as nearly whole as possible.

We stated in the beginning that our aim was a close connection between the life of the home and that of the school. Let us see if this has, in any degree,

been realized. I must confess that none of the children have become seamstresses, neither has anyone taken it upon herself to do all of the family mending. They have, however, shown a growing interest in the work, and have been especially well pleased when they could come to school wearing something wholly, or in part, made by themselves.

Connection of school and home.

The parents, too, have been kind in expressing their appreciation. One of the mothers showed her attitude in a very practical way. Her daughter brought a kimono to make for herself. The rest were interested in it because it was something they, too, could wear, and it was also different from the things they were making. They inquired about the pattern, and the mother, who is a busy dressmaker, took the time to cut one out for them.

Attitude of parents.

Another wise mother realized that the only way to make the work of lasting value was to have some direct application in the home. She suggested to her daughter that, since she had been taught mending, she had better mend her own stockings. The girl not only assented, but helped the good work on by showing her sister how to mend.

We have had no definitely planned course this year. Our work has been governed entirely by the needs of the children. While a systematic course, logically arranged, may be very helpful, there seems to be danger that such a course may become so stereotyped as to prevent the connection, which is so desirable, between the work and the life of the children.

Course following needs of children.

We feel that we have gained a great deal this year. The children's interest in the work has not lagged. They have acquired, besides the knowledge of sewing, an appreciation of the amount of work required to make a garment, and a desire, on the part of some, to be helpful in sewing at home.

CHILDREN CARRYING HOME PRODUCTS FROM THEIR OWN GARDENS IN BASKETS MADE BY THEMSELVES.

CHAPTER XX.

VACATION SCHOOLS.

Great good has already been accomplished in many cities by vacation schools. But I believe that much as they have accomplished in their own legitimate field, still more may be credited to them in the way of indirect influence upon the regular school curriculum.

There are several reasons why this has been true. Let me speak of two, viz., the character of the pupils and the character of the teachers. In the first place, the vacation school has had to deal with children, for the most part, who would otherwise have been on the street. The attendance has been voluntary. There were rival attractions. It has therefore been necessary to interest the children and to bring about the co-operation of the parents. This has compelled consideration of the child's nature and home as well as of his neighborhood and street conditions. In a report on the Boston Vacation Schools, Miss Sarah Louise Arnold says: "The vacation school should afford variety, necessitate activity, be free enough to avoid the elements of tension and strain, should be bright and interesting to serve as a substitute for normal play, which is the inalienable right of childhood, and should admit of irregular attendance, which

Character of pupils.

seems inevitable in the vacation school. In other words we must drop, during the summer, many of the traditions which determine our work during the regular school year, and must give ourselves, with free minds, to discover what subjects and plans of work will interest, instruct and satisfy the children, who make up the *clientele* of the vacation schools. As in the famous recipe for hare soup, the cook must first catch the hare, so in arranging for vacation schools we must first discover where the children are, how they live, what they need and what they enjoy, before we can hope to plan a curriculum which will justify the existence of the school."

Teachers of experience.

The leaders of the movement have been broad-minded people who have been wise in the selection of instructors. Many of these instructors have been well trained teachers of experience who have been glad of the opportunity to give some of their best thoughts and energies to this work if only they might be allowed to break away from some of the traditions of the regular schoolroom. They had long believed that a different curriculum, with more emphasis on those subjects which take the children out of doors and give them something to do for themselves, would be more helpful for the children. The vacation school has given just the kind of an opportunity desired. It would be interesting to trace the development of the ideas of these teachers as they appear in the courses of study prescribed from year to year, to note the crude beginnings, the evidences of uncertainty, of adjustment and readjustment, of attempts to meet the varying needs and conditions. It has evidently been slow, tedious work and the end is not yet. And yet when one glances through from the beginning to the present time he is impressed with the great strides made. Any student of pedagogy will find it well worth his time to study somewhat carefully this record of successes and failures. Miss Arnold bears valuable testimony on this point as follows: "A failure in experiment is not always a mistake. It may be made more helpful than the so-called success. It was necessary in attempting this new work to undertake experiments for the sake of discovering which way the path of wisdom lay. We have learned that certain kinds of work are unsuccessful under the vacation school conditions. We have become assured that certain others are profitable. We are beginning to learn how to adapt ourselves to vacation school conditions, and to make the best use of the facilities at hand."

Valuable reports.

Every teacher of vacation schools and every person who is interested in their organization and maintenance will find it profitable to read some of the many reports on vacation schools. The following are particularly suggestive:—

"Outlines of Work and Occupations in the Vacation Schools in the City of New York for July and August, 1902."

"Second Annual Report of the Vacation Schools of the City of Hartford, Conn., for the Year of 1902."

"Annual Report of the Massachusetts Civic League for 1902, Boston, Mass."

"Report of the Committee on Vacation Schools of Boston, Mass., for 1902."

"Report of the Committee on Vacation Schools of Providence, R. I., for 1901."

A few typical programs taken from these reports, and from other sources, will be found at the end of this chapter.

Teachers for Vacation Schools.

The best teachers for vacation schools are usually those who understand and sympathize with children, have had some experience and are able to adapt themselves to new conditions. The mistake is often made of passing by such a teacher in favor of one technically trained who knows little of children, is not interested in subjects other than his own, and is wedded to the conventional way of presenting this subject. Such a teacher is often the cause of discouragement and failure where success seemed assured. A broad-minded kindergartner or a successful teacher who has been in touch with such schools as the Dewey School of Chicago or the Horace Mann School of New York is almost sure to do good work.

Schoolroom.

The idea of using the regular school building and equipment for evening schools, vacation schools and play schools is growing in popularity. This arrangement has its advantages and its disadvantages. If no schoolroom is at first available, any room with plenty of windows and a good floor will do. It may be in a church, a vacant house or factory, or even in a clean barn.

Furnishings.

No two vacation schoolrooms have ever been furnished in the same way. What the furnishings shall be must depend upon the kinds of work which you expect to do. In any event it should be as simple and inexpensive as possible. If the children are old enough great gain might come to them by allowing them to help in making the equipment. Mr. Joseph Lee has recently said on this subject as follows: "The Committee has felt very strongly that what enlists a boy's loyalty is not what you do for him, but what you get him to do for you. We have accordingly, besides promoting the athletic contests in which the boys

represent the ground, got the boys to do a certain amount of work for the ground, picking up the infinite number of papers which are scattered there every night and putting them in barrels, which we have provided for the purpose; picking up the pieces of glass which seem to take the place of dew in the North End; painting our rubbish barrels, making our bulletin board, hanging up and taking down the swings and the net which protects the children's corner; bringing out the trapezes and the standards for the high jump every morning and taking them back at night; helping to roll and rake the ground, and other services of the sort."

At Hyannis, well ventilated and well lighted rooms, with plenty of blackboard space, were very simply furnished for summer work. The third and fourth year children were given kindergarten chairs and tables and a few movable desks. Two tables, an easel and a few good pictures with fresh flowers each day completed the furnishings. The eighth year children were furnished with simple laboratory tables and chairs, a few books and such specimens of apparatus as they needed. Very soon both rooms were decorated with the results of the industrial work of the children. This furnished a continued source of interest to the children and to their many visitors.

Equipment.

The Providence playgrounds were provided with swings, climbing ropes, hoops, reins, sand heaps and trowels. The reading rooms were equipped with quiet games of all kinds, picture books, and also with a case of books, loaned by the Providence Public Library. In some places jumping ropes, bean bags, ring toss, ninepins, balls, bats, quoits, basket ball and football are furnished.

Great interest is often aroused by tournaments and contests between members of the same school or between different schools.

For rainy days provision is often made by furnishing checkers, dominoes, authors, and similar games, with dolls, toys, picture books, and illustrated children's books and papers.

Character of the Work.

Keep the children out of doors just as much as possible, and, where work must be done in the house, try to arrange your furniture and program so as to have very frequent free exercises. These may consist of physical exercises or of industrial work or of both. This phase of the work is much more important than that which requires the children to be confined in the schoolroom desks for the greater part of the morning. If only regular schoolrooms are provided,

have a part or all of the desks removed from the room. Muscular activity is necessary for upper as well as for lower grade children.

Subjects Taught.

The following lines of work have been found valuable in various vacation schools:—

1. Morning exercises.
2. Physical exercises.
3. Nature study.
4. Manual training or industrial work.
5. Kindergarten work.
6. Common branches.
7. Excursions.
8. Reading rooms.

Under manual training the following subjects have been included: Wood work, iron work, caning, cooking, sewing, sweeping, dusting, nursing, care of children, hammock-making, basketry, hat-making, gardening, leather work, dressmaking, millinery, knitting, crocheting, embroidery, flower-making, doll-making, and printing.

Programs of Work.

Day's program in the Chicago Vacation Schools was divided into four parts, viz.:—

1. Nature study.
2. Drawing.
3. Manual work.
4. Music or physical exercises.

Providence, R. I., reports the following as the program for 1901:—

8.30 to 9.00, general exercises in the school hall. The time from 9 to 12 was divided into four periods of forty minutes each. Classes changed work at the end of each period. Every Wednesday there was an excursion to the country or to the seashore. The outdoor gymnasium was opened for boys of over fourteen.

New York reports for vacation school work three periods each morning for five days of the week.

Typical day's programs for second and third school years are as follows:—

Monday.

1. Draw familiar objects, as bottle, vase forms, etc.
2. Paint leaves.
3. Make dog house.

Tuesday.

1. Paint flowers and leaves.
2. Design: Border for a doily or fan.
3. Make tent.

Kindergarten Exercises.

The summer work in the kindergarten should be characterized by spontaneity and freedom. The play, song, stories, manual work, and nature study should center around the vacation time of the year.

Time divisions suggested are as follows:—

9.00—Opening exercises with songs of greeting and conversation bearing upon the special topics selected for the day or week.
9.20—Marching and rhythm exercises.
9.30—First period of table work.
10.00—Play and games. If playground is shady or if park is adjacent, games should often be out of doors.
10.40—Story hour or general exercises bearing on summer program.
11.00—Second period of table work.
11.40—Closing circle with songs, review, etc.

The Hyannis Vacation School arranged programs like the following:—

Fourth Grade—Monday.

8.00—Morning exercises.
8.15—Arithmetic—solving problems which arise in garden work.
8.40—Garden work.
9.35—Recess—games or socials.
9.55—Language—oral or written language lessons based on the garden and other lines of industrial work.
10.25—Reading—material to consist of stories written by the teacher on the board regarding the industrial work and of poems and prose literature related to such work.
10.50—Closing song.

Fourth Grade—Tuesday.

8.00—Morning exercises.
8.15—History or geography—work correlated with the industrial work.
8.40—Industrial work—weaving basketry or cardboard work.
9.35—Recess.
9.55—Language.
10.25—Reading.
10.50 Closing song.

EIGHTH GRADE—TUESDAY.

8.00—Morning exercises.
8.15—Arithmetic—work based on garden work.
8.45—Gardening.
9.40—Recess—games or lunch party.
10.00—Written and oral language.
10.45—Music.
11.00—Dismissal.

EIGHTH GRADE—THURSDAY.

8.00—Morning exercises.
8.15—Printing.
8.45—Spelling and dictation.
9.15—Geography.
9.40—Recess.
10.00—Basketry.
10.45—Language.
11.00—Dismissal.